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LOGIC,

OR THE

ART OF REASONING SIMPLIFIED.

IN THIS WORK REMARKS ARE MADE ON

Intuitive and Deductive Evidence;

DISTINCTIONS BETWEEN

REASONING BY

INDUCTION, ANALOGY, AND SYLLOGISM,

ILLUSTRATED; THE

Ancient and Modern Modes of Argumentation Contrasted,

AND THE

General Process of Reasoning, and its susceptibility of Improvement from Art stated.

IT ALSO CONTAINS THE DISTINCTIONS BETWEEN

Metaphysical, Moral, and Mathematical Demonstration, the Method of Detecting Fallacies or Deviations from Correct Reasoning, and the Rules of Interpretation, Controversy, and Method.

CLOSING WITH

EXERCISES

On a variety of interesting topics, to guide and develope the reasoning powers of the youthful inquirer after truth.

BY S. E. PARKER,

AUTHOR OF THE ARTICLES PROSODY, QUANTITY, AND VERSIFICATION IN DR. REES' CYCLOPEDIA.

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PREFACE.

THAT man is an intelligent creature, or a being capable of receiving intelligence to an indefinite extent, is not only a well known and established fact, but also one which involves the most important consequences. This single attribute of human existence not only elevates man in the scale of being, constitutes him capable of unlimited improvement, and of communicating it to others, but at the same time, as to the discharge of his duties, grants him the privilege to increase not only his respectability, but also his usefulness to the society with which he is connected. Though, on the one hand, it would be impossible duly to appreciate a gift so inestimable, yet on the other, be it remembered, that there is nothing given to man, there is no talent with which he is endued, but what requires cultivation. Not only our corporeal but also our mental faculties, unless they have salutary exercise, are liable to decline. The body for want of it is liable to wane into the most lamentable state of langor and imbecility; and the mind, for reasons perfectly analogous, through the want of exercising the means, with which we are so abundantly privileged, becomes inert and capable of being not only deceived by others, but also irrevocably injured through our own neglect. It cannot for a single moment be doubted, that man, as a sentient, intelligent being, stands as a candidate for happiness. All men seek it, in one way or the other: a single exception would be a parodox in the history of humanity. According to the extent precisely of our mental vision, not only happiness on the one hand, is before us, until it prospectively rise into all the excellency of a prize whose value is ineffable, but also on the other, the risk of losing that at which all, in one way or the other aim, is felt with a vigilant sensibility that constitutes the best guarantee of success. *Attention* is an important act in the mind of man; when that is gained much is done, *yet not all.* Though the prospect of success, from attention, immediately rise above zero in the scale of expectancy, *yet more is wanting.* An object the most desirable may be proposed, *yet information* of the means of its attainment may be either wanting, or we are not possessed of the method of so connecting the several parts of that information together, as from thence to deduce a conclusion such, as shall infallibly lead to the attainment of the object desired. Hence man, though capable of intelligence, is *fallible*: but especially is that man

fallible, who through want of *attention*, through neglect of *information*, and of the method of deriving correct and practical conclusions from the same, is as the field, which though capable of producing grain, wheat, and the most luxuriant fruits, remains, through want of culture, not only barren, but encumbered with the most noxious weeds. And happy indeed would it be, were this mere *negative* loss, this simple unproductiveness and sterility, all;—happy, in this case, would it be, were we warranted by truth and fact, to consider that this would be all the consequence; as if man, man to whom so much is given, could be irresponsible, when his responsibility rises precisely in proportion to his intellectual superiority, and the privileges of which it is his indispensable duty to avail himself.

It is no part of our present object to define what happiness is, for which we are all, in one way or the other, candidates; nor to say, from whence we are principally expecting it; whether in one, or in many ways. It is sufficient to affirm that we are all waiting for that, which questionless is the very fruition of our being, and whose loss renders it even desirable that that being had never existed. We are all either expecting it, in an OBJECT, purely intellectual, or perhaps we in viewing ourselves as members of a society, from whose interests we are not isolated, contemplate it, at least as to all its minor sources, divided into diverse branches of secular and civil polity. In each and in all these, and in all the various departments of human life, we are surrounded by various means of artifice and deception, and our security from their subterfuges, and the possibility of our ultimate attainment of intellectual excellency and happiness, entirely depend on the correct and successful culture of the inestimable talent with which we are endued, and the attentive and diligent use of the privileges with which we are so highly favored.

TRUTH and ERROR stand so pre-eminently opposed to each other that nothing more than their simple juxta-position is requisite to indicate their immutable hostility. Truth implies and comprehends that which is of the highest importance to man: and the more accurate and ready our methods of detecting and exposing errors are, the more certain are we of being armed against the most fatal enemies not only to ourselves, but to the human family at large. Truth, one would imagine, is so remote from error, or so totally distinct from it, that every rational being, every one capable of discrimination, could need no Rule, no Art, no System, to assist him to separate the one from the other. Yet the experience, not of a day, nor yet of a life, but the history of centuries past, informs us that nothing is more imperatively needed than such Rule, Art, or System.

However opposite the characters of Truth and Error may be, yet there is no fact in history more important and striking, than that man, notwithstanding his capability of intelligence and information, has not always distinguished the one from the other. The pages

of history, the schisms in the church, the divisions in the schools, the countless tomes of controversy, the opposition of counsel at the bar, and the conflicts of party in politics, and even the very wars and bloodshed in which they have too often issued, all rise in voluminous testimony of this serious and melancholy fact. Error, however opposed to Truth, yet nevertheless may be so disguised, so diluted, so presented under the illusions of twilight or so mixed up with what is true, that unless we are possessed of the means to expose the counterfeit, the test to detect the ingredient that vitiates, we are liable to be deceived through semblances the most specious and imposing. Error is not inaptly compared to poison. In the extent of their destruction they may differ; the latter kills a few bodies, the former its thousand, its myriad souls. "Poison," observes one, "in its concentrated state, nauseates at once, but diluted it may deceive and destroy a city." Thus error exists, even in the present age, diluted, disguised, throughout the whole of human society, to an extent such, that on no subject, *theological, political, philosophical, domestic,* or *foreign,* can we find two men, that in all points agree: yet truth in each subject is only one, whilst error, sophistry, or the mistake of a figure in the calculation, may be multiplied, blended, and distorted to an extent indefinite, proportionate to the opacity in the mental vision, or to the means neglected to point out the fallacy and rectify the whole.

That for ages past Error and Sophistry have imposed their destructive effects on myriads reputed rational, is one proof out of many, of the necessity of an aid, which unassisted nature does not ordinarily bestow. Even in the political department how often may it be observed, that one speaker advocates measures diametrically opposed to the other; and the address of each perhaps is so plausible, as to gain half the house. Are both right? Certainly not, perhaps neither, but, at least, half the house is deceived! and that half, if it prevail, will, on a vital question mislead the nation, and involve it in privation and suffering. Are there no means then of analyzing the address that contains the fallacy; no mode of discovering either the false premises assumed; or if they are right, of showing that the conclusion does not logically follow from them? Was there no fallacy, whether of composition, division, or accident, no begging the question, nor of building consequences on a mistaken one? Impossible; these, or one or more of them, must have been concealed, possibly even from the speaker himself, in one or the other of these orations. And the question yet remains, is there no means of more frequently and successfully exposing *error,* which in its whole extent may be justly pronounced to be, the most grievous curse that afflicts humanity.

How does it happen that in matters which immediately affect our secular interest, or touch dishonestly our pocket, we provide laws and a vigilant police to detect the offender, that has practised on us to our injury, the artifices of deception, whilst in a thousand cases

whose consequences may not be so tangible, yet not less important, we suffer so many that will only take the trouble to think and dress up their theory with plausibility, to practise on our credulity? Though any man as a free agent, should have the liberty to think as he pleases, yet that constitutes no reason that another should follow in his wake. Is not this, however, a case general to a very lamentable extent. Could a history of the world be so constructed as to point out, on the one hand, the heresiarchs in the church, the demagogues in politics, or the principal leaders in opinion or party; and on the other, the multitudes on whose credulity, for want of examination, they have practised; that history would be lamentably libellous on humanity. Could we allow this history to pass in panoramic vision before us; could we enter ourselves on the long travel, or penetrate the deep vista of time that it involves;—could we view the mournful shades that have veiled the truth;—count the myriad suns that have risen and set without imparting one ray to the benighted mind;—could we enter into the grave assemblies of the ancients, and view the gloom of error resting on the whole;—could we count the myriad tongues, the thousand pens that have labored to disseminate its influence, or the countless presses that have groaned beneath its volumes counted by the ton:—if in addition to this, we could take another estimate, and scan or measure the reign, the tyranny of error, not by the year, nor yet by the age, but by the century; and with alarm discover, that even at present, and under the same insidious guise as ever, it is undermining our interests of every kind; and that deception in its every form is as sedulously at work now as a thousand years ago; we should then indeed form some faint idea, faint as to the magnitude of its importance, of the necessity of every aid to enable us and others to inculcate truth on the one hand, with all the force of that argument of which it is so happily susceptible, and to expose, on the other, the common enemy, that has with such artful diguise, imposed on so many myriads of our fellow men, to all the contempt and abhorrence to which its mendacity and deceit so justly entitle it.

On the sacred page, we read, indeed, of the "*times of ignonorance.*" And we are likewise aware that a considerate parent does not expect as much from his infant child, as he does from his mature offspring. "Of them to whom much is given," however, "much is required." But we cannot with propriety call this the time of ignorance. Wilful ignorance, indeed, may and does exist; yet not necessary ignorance. We have not only the means of *information* at command, but may possess ourselves with the mode of rightly using it, to our own advantage, and to the benefit of the society to which we belong. Can we then possibly take a view of past ages and of the lamentable consequences of ignorance and error on the myriads who are now "minish'd from the sons of men," without feeling, without compassion, without philanthropy? In honor, in compliment to ourselves, we presume that we have not

only self-interest, but philanthropy too; and both are involved in the argument. It is no uncommon case that we knowbest how to secure our neighbor's interest, when we know how to secure our own; and his being secured, will often promote ours also. We are not, and cannot be, isolated beings: both our own interest and that of others are in one common stake. The success of fallacy through the supineness of times past, the examples of past ages, and the superior privileges of this, our own interest, and those of the thousands with whom we are connected, all rise in proof that our welfare and happines are dependant on, if not identified with, our strenuous exertions. Our whole life is, or ought to be, concerned either in the acquisition of truth, or in the detection of what is contrary to its precepts, to whatever department of life those precepts belong.

Enough no doubt has already been said, for the conviction of every ingenuous and liberal mind relative to the utility and importance of Logic. But to our own remarks on this point, we shall take the liberty to add the following given by Dr. Whately. "If it were inquired what is to be regarded, as the most appropriate *intellectual* occupation of MAN, as man, what would be the answer? The statesman is engaged with political affairs; the soldier with military; the mathematician with the properties of numbers and magnitudes; the merchant with commercial concerns, &c.; but in what are *all* and each of these employed; employed, that is *as men?* for there are many modes of exercising the faculties, mental as well as bodily, which are in great measure common to us with the lower animals. Evidently, in *reasoning;* men are all employed in deducing, *well or ill*, conclusions from premises; each concerning the subject of his own particular business. If, therefore, it be found that the process going on daily, in each of so many different minds, is, in any respect the *same;* and if the principles on which it is conducted can be reduced to a regular system, and if rules can be deduced from that system, for the better conducting of the process, then it cannot be denied that *such a system and such rules must be especially worthy the attention, not of the members of this or that profession merely, but of every one who is desirous of possessing a well cultivated mind.* To understand the theory of that which is the appropriate intellectual occupation of man in general, and to learn to do that *well*, which *every one will and must do, whether well or ill*, may surely be considered as an essential part of a liberal education.

"But many who allow the use of systematic principles in other things, are accustomed to cry up *common sense* as the sufficient and only safe guide in reasoning. Now, by common sense is meant, an exercise of the judgment unaided by any art or system of rules; such an exercise as we must necessarily employ in numberless cases of daily occurrence; in which, having no established principles to guide us,—no line of procedure distinctly chalk-

ed out,—we must needs act on the best extemporaneous conjectures we can form. He who is eminently skilled in doing this, is said to possess a superior degree of common sense. But that common sense is only our *second-best guide;* that the rules of art, if judiciously framed, are always desirable when they can be had, is an assertion, for the truth of which I may appeal to the testimony of mankind in general; which is so much the more valuable, inasmuch as it may be accounted the testimony of *adversaries.** For the generality have a strong predilection in favor of common sense, except in those points in which they respectively possess the knowledge of a system of rules, in which they deride any one who trusts to unaided common sense. A sailor will perhaps, despise the pretensions of medical men, and prefer treating a disease by common sense; but he would ridicule the proposal of navigating a ship by common sense without regard to the principles of the nautical art. A physician again, will perhaps contemn systems of political economy, of logic or metaphysics, and insist on the superior wisdom of trusting to common sense in such matters, but he would never approve of trusting to common sense in the treatment of diseases. Neither again would the architect recommend a reliance on common sense alone, in building, nor the musician in music, to the neglect of those systems of rules, which in their respective arts, have been deduced from scientific reasoning aided by experience. And the induction might be extended to every department of practice. Since, therefore, each gives the preference to unassisted common sense, only in those cases where he himself has nothing else to trust to, and invariably resorts to the rules of art, whenever he possesses the knowledge of them, it is plain that mankind universally bear their testimony, though unconsciously and unwillingly, to the preferableness of systematic knowledge to conjectural judgment.

"There is, however, abundant room for the employment of common sense in the application of the system. To *bring* arguments, out of the form, in which they are expressed in conversation, and in books, into the regular logical shape, must be of course, the business of common sense, aided by practice; for such arguments are, by supposition, not as yet within the province of science; else they would be already strict syllogisms. To exercise the learner in this operation, I have subjoined, in the appendix, some examples, both of isolated argument, and of the analysis of argumentative works.

"The cause of truth universally, and not least of religious truth, is benefitted by every thing that tends to promote sound reasoning, and facilitate the detection of fallacy. The adversaries of our faith would, I am convinced, have been on many occasions, more satisfactorily answered, and would have had fewer openings for cavil,

* "Fas est doceri ab hoste."

had a thorough acquaintance with Logic been a more common qualification than it is. Not only all those who are engaged in or designed for the sacred ministry, but all others who are sensible that the cause of true religion is not a concern of the ministry alone, should remember that this is no time to forego any of the advantages which that cause may derive from an active and judicious cultivation of the faculties. It is not, however, solely or chiefly for polemical purposes that the cultivation of the reasoning faculty is desirable; in persuading and investigating, in learning or teaching, in all the multitude of cases, in which it is our object to arrive at just conclusions, or to lead others to them, it is most important. A knowledge of logical rules will not indeed supply the want of other knowledge, nor was it even proposed, by any one who really understood the science, to substitute it for any other; but it is no less true that no other can be substituted for it: that it is valuable in every branch of study; and that it enables us to use the knowledge we possess to the greatest advantage."

We cannot here forbear to mention that it was our privilege to be personally acquainted with one, who, if ever man was, was a master in Logic; and very fortunately so, for no man, since the seventeenth century was ever more engaged in controversy; and what was the consequence? It is immediately and every where apparent. The ease with which he, on every occasion, managed his adversary; the dexterity he displayed in immediately detecting the fallacy, wherever and however concealed; the facility he evinced in dissipating his illogical conclusions, and the suavity and temper which were prevalent through the whole, left him decidedly, in the estimation of every rational and candid mind, in undisputed possession of the field:—and why?—He was an eminent Logician.

But however we would advocate the acquisition of truth, it is by no means our intention to intimate that Logic, or the Art of Reasoning, is the only means by which Truth, in every sense, is discovered. To the representation of Logic as *the* method of discovering Truth, as if it were the only method; or even *a* method, without stating what are those truths we are to expect from the process which Logic institutes, may be in no small degree attributed the misunderstanding of the specific object it proposes. TRUTHS are either those of INFORMATION or INSTRUCTION. The former we derive from observation or testimony, or even from experiment instituted at the time, by a *conjectural* conclusion deduced from *assumed* premises. The latter, truths of Instruction, we derive from data, which though they may be in the possession of others, yet probably have been employed either to no purpose, or misemployed by fallacy and incorrect reasoning, to a wrong one. These data fall within the province of Logic, either from them to deduce a truth not before perceived as a necessary consequence of the premises they afford; or to detect an error resulting from their misapplication.

"When it is asked," says Dr. Whately, "whether such great discoveries as have been made in Natural Philosophy, were accomplished or can be accomplished by Reasoning? the inquirer should be reminded that the question is ambiguous. It may be answered in the affirmative, if by Reasoning is meant to be included, the *assumption of Premises*." To the assumption of premises, frequently scientific men, in search for some new or undiscovered truth, are indebted; from which, though at first, nothing better than a *probable conjecture* can be inferred, yet that conjectural inference may institute a course of experiments, which may ultimately establish the fact. "Thus Sir Humphrey Davy finding that the flame of hydrogen gas was not communicated through a long slender tube, *conjectured* that a shorter, but still slenderer tube, would answer the same purpose. This led him to try the *experiment*, in which by successively shortening the tube, and at the same time lessening its bore, he arrived at last at the wire-gauze of his safety-lamp." Now throughout the whole of this process, *assumed premises*, *conjecture*, *experiment*, it is evident that a kind of inductive reasoning was going on, that is, so far as reasoning hypothetically, and in a necessary case, from assumed premises, is acting until positive ones can supply their place; yet it is not that strictly, in which Logic, that pretends not to the discovery of new Truths in an unrestricted sense, is concerned.

Truths of Information belong to the sciences; to Theology, Ethics, Jurisprudence, to the Arts, and to the Business and Experience of common life; and a distinct class of them to each. For the acquisition of these, the sciences, and the several sources respectively to which Truths of Information belong, must be duly consulted. These are the volumes from which we have to cull this kind of intellectual furniture, and nothing else can properly communicate it. It is here too that we not only have to derive our *Information*, and all the *truth* which it implies, but, moreover, *clear and distinct ideas* of each individual, both in its isolated and relative position, without which all our knowledge is vain. *The Instructor in Logic takes it for granted that his pupil comes prepared with these, that he has them not to seek, or at least that he is furnished with as many as are necessary for his immediate purpose.*

It is of considerable importance in this early stage of our inquiry, to state distinctly that it is to the sciences, and to the proper sources that we must look for Information; but it is the peculiar province of Logic to teach the most salutary and practical use of the knowledge we possess, either for the purpose of *instructing* ourselves or others, by that only argumentative process, which must necessarily, in every rational mind, demand conviction; or for the refutation of conclusions, whether deduced from irrelevant premises, or falsely derived from true ones; sophisms which are so frequently exemplified by those who are dispossessed of that

discrimination, and unacquainted with the mode of detecting fallacy which it is the business of Logic to impart.

When we, on first opening the pages of Euclid, read, "a line is length without breadth;" "a plane rectilineal angle is the inclination of two straight lines to one another that meet in a point;" "that a triangle is a plane figure bounded by three lines," &c.; from hence we derive IDEAS, and TRUTHS OF INFORMATION; but it is not the business of Logic to teach us these: these are nothing but the mere furniture, the requisite data, that we must possess, before we can commence and successfully employ to any beneficial purpose, the argumentative process. But when we are once furnished with the prerequisite terms and premises, and come to read, "If two triangles have two sides, and the included angle in the one, equal two sides and the included angle in the other, the triangles will be equal and identical in all respects," we require the demonstrative or argumentative process; the result afforded by which is a TRUTH OF INSTRUCTION, which it is the province of Reasoning or Logic to establish on premises from which the proof is legitimately derived.

Nothing is more calculated to throw into the shade, if not most unjustly into disrepute, an art or science, than misrepresenting its distinct and specific object; loading it with more than it professes to perform, imputing to it obligations which are either inconsistent with itself, or disreputable in themselves. A time was, when the object of *Astronomy* was not distinguished from that of *Astrology*, or the pretended art of divining futurities from the configurations and motions of the heavenly bodies. And had not Astronomy been happily rescued from this misconception, and established on the basis of its own independent reputation, it might to the present day, in the estimation of the uninformed, have ranked in a grade equally low with that of palmistry, legerdemain or necromancy. A time existed in which even the respectable science of Chemistry was merged into the mystified shades of Alchemy, whose most popular and ostensible object was to find the secret of turning all things into gold; or the panacea, the universal cure of all diseases to which humanity is subject, without excepting even mortality itself. Chemistry, however, very fortunately has emerged from this eclipse, and presents itself disencumbered of distortions not its own, in that elegant form in which it is at once so interesting and useful to society.

But who are they, that from want of proper discrimination, have for a period nearly equal to the night of Alchemy, succeeded to throw the shades of misrepresentation on the peculiar and specific object of Logic, and that so artfully, as to convert characters, in other respects of considerable respectability and importance in the Republic of Letters, to their own heresy? Had these been the mere tyros in the art, those who had contented themselves with merely some hasty glances at an introductory chapter, there would

have been nothing in the circumstance uncommon, and they would have verified only the ancient adage, so general in its application, "damnunt quod non intelligunt," they condemn what they do not understand. For the honor of those, however, who have professedly undertaken to teach the art, or to write voluminous treatises on the science, we could wish that we had it not to say, that the charge lies exclusively at their door, Συ ει ὁ διδασκαλος, και ταυτα ου γινωσκεις, "Art thou a teacher, and knowest not these things?" implies a charge equally applicable at present as in former times. Amongst them we could mention one, who has written a volume with no other effect, than to evince the possibility of a man's writing more than 300 pages on a subject, which he, from the first time he took up his pen to the last page it had written, evidently did not understand. To discover a ship at sea, 300 miles from the port whence she had sailed, without any one on board knowing either where they were, or whither they were going, would lead to the inference that neither compass was in the binnacle, nor navigator in the cabin; but to find a being reputed intellectual, navigating over 300 pages of heterogeneous and irrelevant matter, performing a sort of zig-zag traverse wide of the mark, and having no bearing on the object originally proposed, is merely one example, among the many thousands which might be added, of the danger of following any one, merely because he is a teacher, without the test of our own examination and scrutiny, and the exercise of that function which it is the specific object of Logic itself to develope and explain.

No science can be expected to make any considerable progress, which instead of being regularly cultivated on right principles, has been liable to the misrepresentation of those who never correctly understood its specific object themselves, nor therefore could teach it to others. From the time of the schoolmen, *censured by Bacon, rather for their abuse of the art, than for any legitimate purpose to which they applied it*, down to the present, we meet with a host of authors, who have either written expressly on the same, or more or less made remarks thereon; which leads to a discovery no less strange than true, that very few clearly understood the subject!! Only two writers, the former about the middle of the last century, and the latter, Dr. Whately, have proved that they were aware that LOGIC *is chiefly concerned with the* THIRD ACT OF THE MIND, ARGUMENTATION; *and with* SUCH EXPRESSION OF IT *as correctly to convey its conclusiveness to others.* These two alone appear to have cleared the equation from the co-efficients with which it was encumbered, from quantities foreign to its distinct intention, and that concealed it in mists of metaphysical irrelevancy.

It is therefore not unreasonable to hope, that as the age at last arrived, when Astronomy threw away the anamorphosis of Astrology, by which she was disfigured; and Chemistry of Alchemy, so Logic, with equal success, will divest herself of all the voluminous mysticisms quite foreign to her definite design, and that her

claim to utility will appear not less clear, than does the precious metal when detached from the ore, that has for ages concealed it from the use and general benefit of mankind.

Of all the preceding Treatises on Logic, Dr. Whately's * may be justly entitled the chef-d'œuvre. To his work, this is, throughout *avowedly* indebted. His remarks on the specific intention of the art, and on the identity of the process of argumentation in the mind, whether expressed artificially or not, are at once too important and interesting to be omitted; and their value alone will be a sufficient apology for their insertion.

"With the exception of Aristotle, scarcely a writer on Logic can be mentioned, who has clearly perceived, and steadily kept in view its real nature and object. Before his time, no distinction was made between the science of which we are speaking, and that which is now called metaphysics. It is not, therefore, much to be wondered at, that in still later times, several ingenious writers, forming their notions from professed masters of the science, and judging of its value from their failures, should have treated the system, as if it were the Aristotelian, with such unwarrantable reprobation. Therefore they have assailed the study with a host of objections, so totally irrelevant, as might excite astonishment in any one who did not fully estimate the force of prejudice," having no other basis than that of misconception.

"By these objectors, Logic has been considered to furnish a *peculiar* method of reasoning, instead of a method of analyzing that mental process, which must *invariably* take place in all correct reasoning. For Logic does not bring forward the regular Syllogism, as a distinct mode of argumentation, designed to be substituted for any other mode, but as the form to which *all* correct reasoning may be ultimately reduced; and which consequently serves as a *test* to try the validity of any argument; in the same manner as by chemical analysis we develope, and submit to a distinct examination the elements of which any compound body is constituted, and are thus enabled to detect any latent sophistication or impurity."

"One of the chief impediments to the attainment of a just view of the nature and object of Logic, is the not fully understanding *the* SAMENESS *of the reasoning process in all* cases. If as the ordinary mode of speaking would seem to indicate, mathematical, theological, metaphysical and political reasoning were essentially different from each other, or different kinds of reasoning, it would follow that there must be so many different species of Logic. And such is perhaps the most prevailing misconception. Others again, who are aware that the simple System of Logic, may be applied to

* "Elements of Logic, comprising the substance of the article in the Encyclopedia Metropolitana, by R. Whately, D. D. Principal of St. Alban's Hall, and late Fellow of Oriel College, Oxford."

all subjects whatever, are yet disposed to view it as a *peculiar* method of reasoning, and not, as it is, a method of unfolding and analyzing our reasoning: whence many have been led, as the author of the Philosophy of Rhetoric, to talk of comparing Syllogistic Reasoning with Moral Reasoning; taking it for granted that it is possible to reason correctly without reasoning logically; which is, in fact, as great a blunder, as if any one were to mistake *grammar* for a peculiar *language*, and to suppose it possible to speak correctly without speaking grammatically. They have in short considered Logic as *an* art of reasoning; whereas, so far as it is an art, it is *the* art of reasoning; the Logician's object being, not to lay down principles by which one *may* reason, but by which all *must* reason, even though they are not distinctly aware of them: to lay down rules, not which *may* be followed, but which cannot possibly be departed from in sound reasoning."

"Supposing it then to have been perceived that the operation of reasoning is in all cases the same, the analysis of that operation could not fail to strike the mind as an interesting matter of inquiry. And moreover *since apparent arguments which are unsound and inconclusive, are so often employed, either from error or design; and since even those who are not misled by these fallacies, are so often at a loss to detect and expose them in a manner satisfactory to others, or even to themselves;* it could not but appear desirable to lay down some *general rules of reasoning, applicable to all cases, by which a person might be enabled the more readily and clearly to state the grounds of his own conviction, or of his objection to the arguments of his opponent, instead of arguing at random, without any fixed and acknowledged principles to guide his procedure.* Such rules would be analogous to those of arithmetic, which obviate the tediousness and uncertainty of calculations in the head, wherein after much labor, different persons might arrive at different results, without any of them being able distinctly to point out the error of the rest. A system of such rules, it is obvious, must, instead of deserving to be called the art of wrangling, be more justly characterized as 'the art of cutting short wrangling,' by bringing the parties to issue at once, if not to agreement; and thus saving a waste of time and ingenuity."

Whatever is an enemy to truth is an enemy to man. Prejudice* is an enemy to truth; and, therefore, Prejudice is uniformly an enemy to man. Consequently, wherever, and on whatever subject, prejudice is found to exist, it is there that we have an enemy to suspect. Prejudice stands opposed to judgment in no feature more

* "Erroneous judgments are denominated prejudices, or rash judgments, or judgments passed before we have duly examined all the circumstances of the case on which we intend to decide. Prejudice generally relate to opinions; prepossessions to attachments; the former refers chiefly to things, the latter to persons."—Jamieson, p. 188.

than in this, that if prejudice be entitled to be termed judgment at all, it is *a rash judgment, a judgment formed without adequate examination.* Arithmetic itself could not be more usefully employed, than to calculate, if it could, the quantity of good already lost to man, and which he is daily losing, through prejudice. Precisely then in proportion to the number of prejudices we have, or to their strength, have we, if we would secure the benefit of which otherwise they will assuredly deprive us, the more numerous and powerful enemies to overcome. From these considerations it cannot be otherwise than evident that, whatever object or purpose we find most frequently rejected through mere prejudice or want of examination, it is in that, that we have reason to believe a benefit is lost to us. And no science more frequently than Logic has been rejected through prejudice. And consequently, it is the science, in which we have reason to believe, that through want of examination we have been deprived of advantage; an advantage too that refers to all the interests in which we are concerned.

The history of a science so important as Logic cannot fail to be interesting; and none was so capable of giving it, combined with as much instruction, as one possessed of the discriminative powers of Dr. Whately. To omit it, would be an injury to this work; but to substitute our own phraseology instead of his, would be an act of temerity which we decline. We shall therefore insert it without further apology.

"Zeno, the Eleatic, whom most accounts represent as the earliest systematic writer on the subject of Logic, or, as it was then called, Dialectics, divided his work into three parts; the first of which, on consequences, is censured by Socrates [Plato, Parmen,] for obscurity and confusion. In his second part, however, he furnished that interrogatory method of disputation, ['ερωτησις,*] which Socrates adopted, and which has since borne his name. The third part of his work was devoted to what may not be improperly termed the art of wrangling, ['εριστικη,†] which supplied the disputant with a collection of sophistical questions, so contrived, that the concession of some point which seemed unavoidable, immediately involved some glaring absurdity. This, if it is to be esteemed as at all falling within the province of Logic, is certainly not to be regarded, as some have ignorantly represented, as its principal or proper business. The Greek philosophers generally have unfortunately devoted too much attention to it; but we must beware of falling into the vulgar error of supposing the ancients to have regarded as a serious and intrinsically important study, that which in fact they considered as an ingenious recreation. The disputants diverted themselves in their leisure hours by making trial of their own and their adversary's acuteness, in the endeavor mutually to perplex each

* Reasoning by interrogation.

† Wrangling, a disputation instituted on purpose to perplex.

other with subtle fallacies; much in the same way as men amuse themselves with propounding and guessing riddles, or with the game of chess; to each of which diversions the sportive disputations of the ancients bore much resemblance. They were closely analogous to the wrestling exercises of the Gymnasium; these last being reckoned conducive to the bodily vigor and activity, as the former were to habits of intellectual acuteness; but the immediate object in each was a sportive not a serious contest; though doubtless fashion and emulation often occasioned an undue importance to be attached to success in each. Zeno, then, is hardly to be regarded any further as a logician than as to what respects his *erotetic** method of disputation; a course of argument constructed on this principle being properly an hypothetical Sorites,† which may easily be reduced to a series of syllogisms.

"To Zeno succeeded EUCLID of Megara, and ANTISTHENES, both pupils of Socrates. The former of these prosecuted the subject of the third part of his predecessor's treatise, and is said to have been the author of many of the fallacies attributed to the Stoical school. Of the writings of the latter nothing certain is known. If, however, we suppose the above mentioned sect to have been his disciples in this study, and to have retained his principles, he certainly took a more correct view of the subject than Euclid. The Stoics divided all λεκτα, *every thing that could be said*, into three classes: 1st. THE SIMPLE TERM; 2d. THE PROPOSITION; 3d. THE SYLLOGISM, viz. the *hypothetical*, for they seem to have had little notion of a more rigorous analysis of argument than into that familiar form. We must not here omit to notice the merits of ARCHYTAS, to whom we are indebted for the doctrines of the Categories. He, however, as well as the other writers on the subject, appears to have had no distinct view of the proper object and just limits of the science of Logic, but to have blended with it metaphysical discussions not strictly connected with it; and to have dwelt on the investigation of the nature of terms and propositions, without maintaining a constant reference to the principles of Reasoning; to which all the rest should be made subservient.

"The state then in which ARISTOTLE found the science, if indeed it can properly be said to have existed at all before his time, appears to have been nearly this: the division into *Simple terms*, *Propositions*, and *Syllogisms*, had been slightly sketched out; the doctrine of the *Categories*, and perhaps that of the *Opposition of Propositions*, had been laid down, and, as some believe, the *Analysis of species into Genus and Difference*, had been introduced by Socrates. These at best were rather the materials of the System than the System itself; the foundation of which he indeed distinctly claims the merit of having laid, and which remains fundamentally the same as he left it.

* Interrogatory.

† From Σωρος, a pile: Sorites, a pile or Series of abridged Syllogisms.

"It has been remarked that the logical system is one of those few theories which have been begun and perfected by the same individual. The history of its discovery, as far as the main principles of the science are concerned, properly commences and ends with Aristotle; and this may perhaps in part account for the subsequent perversions of it. The brevity and simplicity of its fundamental truths, to which point indeed all real science is perpetually tending, has probably led many to suppose that something much more complex, abstruse and mysterious remained to be discovered. The vanity too, by which all men are prompted unduly to magnify their own pursuits, has led unphilosophical minds, not in this case alone, but in many others, to extend the boundaries of their respective sciences, not by the patient development and just application of the principles of those sciences, but by wandering into irrelevant subjects. The mystical employment of numbers by Pythagoras, in matters utterly foreign to arithmetic, is perhaps the earliest instance of the kind. A more curious and important one is the degeneracy of astronomy into judicial astrology; but none is more striking than the misapplication of Logic, by those who have treated of it as '*the art of rightly employing the rational faculties*,' or who have intruded into it the province of Natural Philosophy, and regarded the Syllogism as an engine for the investigation of nature; while they overlooked the boundless field that was before them within the legitimate limits of the science; and perceived not the importance and difficulty of the task, of completing and properly filling up the masterly* sketch before them.

"The writings of Aristotle were not only absolutely lost to the world for about two centuries, but seem to have been but little studied for a long time after their recovery. An art, however, of Logic, derived from the principles traditionally preserved by his disciples, seems to have been generally known, and to have been employed by Cicero in his philosophical works; but the pursuit of the science seems to have been abandoned for a long time. Early in the Christian era, the Peripatetic doctrines experienced a considerable revival; and we meet with the names of GALEN and PORPHYRY as logicians: but it is not till the fifth century that Aristotle's logical works were translated into Latin by the celebrated BOETHIUS. Not one of these seems to have made any considerable advances in developing the theory of reasoning. Of Galen's labors little is known; and Porphyry's principal work is merely on the PREDICABLES. We have little of the science till the revival of learning among the Arabians, by whom Aristotle's treatises on this as well as on other subjects were eagerly studied.

"Passing by the names of some Byzantine writers of no great importance, we come to the time of the Schoolmen, whose waste of ingenuity and frivolous subtilty of disputation need not be enlarged

* Aristotle's.

upon. It may be sufficient to observe, that their fault did not lie in their diligent study of Logic, and the high value they set upon it, but in their utterly mistaking the true nature and object of the science; and by the attempt *to employ it for the purpose of physical discoveries*, involving every subject in a mist of words to the exclusion of sound philosophical investigation. Their errors may serve to account for the strong terms in which *Bacon* sometimes appears to censure such pursuits; but that the censure was intended to bear against the extravagant perversions, not the legitimate cultivation of the science, may be proved from his own observations on the subject, in his *advancement of learning*.

"His moderation, however, was not imitated in other quarters. Even *Locke* confounds in one sweeping censure the Aristotelic Theory, with the absurd misapplications of it in later years. His objection to the science, as unserviceable in the *discovery* of truth, which has of late been often ignorantly repeated, while it holds good in reference to many *misnamed* logicians, indicates that, with regard to the true nature of the science itself, he had no clearer notions than they had, of the proper province of Logic, viz. *Reasoning;* and of the distinct character of that operation from the observations and experiments which are essential to the study of nature.

"An error apparently different, but substantially the same, pervades the treatises of Dr. Watts, and other modern* writers on the subject. Perceiving the inadequacy of the syllogistic theory to the vast purposes to which others had attempted to apply it, he still craved after the attainment of some equally comprehensive and all-powerful system, which he accordingly attempted to construct, under the title of "*The Right Use of Reason*," which was to be a method of invigorating and properly directing all the powers of the mind: a most magnificent object indeed, but one which not only does not fall under the province of Logic, but cannot be accomplished by any *one* science or system that can even be conceived to exist. The attempt to comprehend so wide a field, is no extension of science, but a mere verbal generalization, which leads only to vague and barren declamation. In every pursuit the more precise and definite our object, the more likely we are to attain to some valuable result; if, like the Platonists, who sought after the αυταγαθον, or the abstract idea of good, we pursue some specious but ill-defined scheme of universal knowledge, we shall lose the substance while grasping at a shadow, and bewilder ourselves in empty generalities.

"Complaints have also been made that Logic leaves untouched the greatest difficulties, and those which are the sources of the chief errors in reasoning, viz. the ambiguity or indistinctness of *Terms*, and the doubts respecting the degrees of evidence in va-

* From this charge, a small work, entitled, "A Compendium of Logic," printed at London about 1780, is entirely free.

rious *Propositions:* an objection which is not to be removed by any such attempt as that of Dr. Watts to lay down "rules for forming clear ideas, and or guiding the judgment," but by replying that no art is to be censured for not teaching more than falls within its province, and indeed more than can be taught by any conceivable art. Such a system of universal knowledge as should instruct us in the full meaning or meanings of every term, and the truth or falsity, certainty or uncertainty, of every proposition, thus superseding all other studies, it is most unphilosophical to expect or imagine. And to find fault with Logic for not performing this, is as if one should object to the science of Optics for not giving sight to the blind; or as if, like the man of whom Warburton tells a story in his Div. Leg. one should complain of a *reading-glass*, for being of no service to a person who had never learned *to read.*

"In fact the difficulties and errors alluded to are not in the process of Reasoning itself which alone is the appropriate province of Logic, but in the *subject-matter* about which it is employed. This process will have been correctly conducted, if it has conformed to the logical rules, which preclude the possibility of any error creeping in between the principles from which we are arguing, and the conclusions we deduce from them. But still that conclusion may be false, if the principles we start from are so. In like manner, no arithmetical skill will secure a correct result to a calculation unless the data are correct from which we calculate: nor does any one on that account undervalue arithmetic; and yet the objection against Logic rests on no better foundation.

"There is in fact a striking analogy in this respect between the two sciences. All numbers, which are the subject of arithmetic, must be numbers of *some things*, whether *coins*, *persons*, *measures*, or *any thing else;* but to introduce into the science any notice of the things respecting which calculations are made, would be evidently irrelevant, and would destroy its scientific character: we proceed, therefore, with arbitrary signs respecting numbers in the abstract. So also does Logic pronounce on the validity of a regularly constructed argument, equally well, though arbitrary symbols may have been substituted for the terms; and consequently, without any regard to the things signified by those terms. And the possibility of doing this, though the employment of such arbitrary symbols has been absurdly objected to, even by writers who understood not only arithmetic but also Algebra, is a proof of the strictly scientific character of the system. But many professed logical writers, not attending to the circumstances which have been just mentioned, have wandered into disquisitions on various branches of knowledge; disquisitions which must evidently be as boundless as human knowledge itself, since there is no subject in which Reasoning is not employed, and to which, consequently, Logic may not be *applied.* The error lies in regarding every thing as the *proper province* of Logic, to which it is *applicable.* A si-

milar error is complained of by Aristotle, as having taken place with respect to Rhetoric; of which, indeed, we find specimens in the arguments of several of the interlocutors in *Cic de Oratore.*"

It would appear from the numerous treatises on Logic to which we have adverted, that the majority of them have been written for the adult reader exclusively, or for the advanced student at the University or College; without the consideration on the part of the author, how much might be done, consistently with every other design, through the medium of method, arrangement, and all the advantages derivable from typographic distinction, further to facilitate and render more general, the acquisition of a science whose importance is co-extensive with every interest existing in society. In numerous schools and respectable seminaries, it is no uncommon thing to find boys of fourteen or fifteen years of age, that have creditably passed through several of the first books of Euclid, and the more difficult parts of algebra; and in a very reputable academy* in this city, several young ladies of a similar age, have with much benefit to themselves and credit to their instructor, successfully studied Euclid, Algebra, Fergus's Nat. Philosophy, and Butler's Analogy. Now we would ask, what is there in Logic more difficult, than in any of the sciences and works just mentioned? If there be any difficulty, it is not in the art itself certainly, but it may exist in the obscure and injudicious manner of exhibiting it. Every art has its definitions, axioms, rules, and a few technicalities peculiar to itself, but these once learned, and their use by a little practice become familiar, the difficulty is over, the rest is a pleasure, a and permanent advantage.

In addition to every other reason calculated to render a science less generally studied, is the want of proper method and judicious arrangement. In every treatise we find matter of principal, secondary and remote importance. A work with the whole of this blended indiscriminately, is at once forbidding, inconvenient in the business of tuition, and can never be used as a book of reference. A reader to whom a work of this description is presented, though his design is only to learn the general scope and intention of the author, has only one alternative; that is to read the whole through, whether the whole, in his case, be necessary or not. Very possibly, on first opening the book, his object might be, particularly if his time be not very ample, to discover merely what are the leading points, or what has the first claim to his attention; but if this be mixed up, without distinction, in the general mass, and he a learner, he is supposed neither to have the discrimination nor the leisure to make this selection for himself; and the consequence is, either that he closes the book in discouragement, or has the fortitude patiently to wade through matter of first, second and third rate importance, and after a dozen readings of this kind, the cloud proba-

* Special reference is made to the seminary of Rev. C. H. Alden.

bly remains, and his memory cannot be refreshed by easy and ready reference. The work, therefore, is finally abandoned, not because its subject had no intrinsic merit, but because its author never anticipated the peculiar exigencies of the learner, nor knew how to adapt the arrangement to the circumstances of those whose time is limited. Whoever became accurately acquainted with the French by toiling through the 540 octavo pages of Chambaud's Grammar, where *Rule*, *Exception*, *Illustration*, *Example*, *Remark*, *Exercise* and *Note* are crowded into one chaos? Or what mere learner has the power to separate so much ore from the more precious metal? *The mere want of judicious method alone, has done more to disserve the cause of Education, to impede the teacher and discourage the learner, than is commonly imagined.*

Since we cannot perceive any peculiar difficulty in the science or art of Logic itself, at least, certainly nothing greater than what is implied in learning the simple art of English Grammar, it remains only to remove whatever prejudices may have arisen from the misrepresentations of those who never understood the science themselves, or the obscurities of others, who, in accommodation to the learner or the man of business, never knew how to exhibit it. By the latter, a man of business, we are addressed. He says, "what is Logic, its nature and object? To read that book, would not suit me: I have look'd at its pages in vain: I have not time: I want something to strike the eye at once. Show me the picture, the full length portrait: if there be a cloud, or dust, remove it: let me see not only it at one look, but its shape, features, color, &c.: and then, by a few glances, by looking at a picture, I read a whole book, an entire volume: my first intention is answered: and if I am satisfied I will return, and view the picture again, or many times, till the picture is no longer on canvass only, but painted on my eye, my memory, my understanding; and what I know, I can surely explain to others. But if you cannot treat me in this way; if you hand me that heavy prosing volume, where instead of a single line visible or distinct, or anything like the ready picture, all lines and all colors are put on with one brush, for such a painter's pi I have no time, business calls, and though I was 'almost persuaded' to become a logician, I shall be compelled to remain 'altogether,' what I was, unacquainted with the nature and design of logic."

Logic is certainly an essential part of a liberal education, and desirable for all who would possess a well cultivated mind. And if, as is certainly the fact, there is less difficulty in it, than there is in arithmetic, and the impediments to a clear view, and ready attainment of it may be removed, as we have laboured to effect in this volume, we see no reason why it should not become, to the advantage and credit of this nation, a general study; no reason why, that all possessing any native talent, or those at least that are competent to attend to the study of arithmetic or grammar, should not learn it; nor any reason why it could not with advantage be intro-

duced into the schools as well as into the colleges: that all, not only the Divine, the Barrister, the Senator, the Politician, the Lecturer, the Author, and the Teacher, who would eminently find their account therein, should not thorougly understand it; but also the merchant, the tradesman, and the mechanic, many of whom are men of considerable talent, and know not yet what social or civil duties they may have to fulfil; and in short, all who are aware that the mind is an endowment so much more valuable than the body, and that it is infinitely more worthy of the ornaments of every mental excellency and acquisition, than the latter can be of the finest and most costly apparel.

To promote this object, and furnish every facility that students of every class, and persons in every situation can require, the following arrangement will be found to prevail throughout the present volume. 1st. The definitions and rules and whatever, in the development of the science, calls for principal attention, will be distinguished on the page from the illustrations, notes and examples; and the former, for the convenience of those who wish to impress them on the memory, will be expressed with the utmost brevity, and numbered throughout for the purpose of reference. 2dly. The whole work will be divided into chapters, and each chapter will close with an interrogatory exercise on the subjects it explains, accompanied with apposite examples to evince that the pupil not only remembers but also understands the rule or definition he recites. This brings again under consideration and inquiry, and that in a different or inverse manner, every subject that was more directly treated by the chapter to which it refers. The very nature of a recapitulatory exercise is to require, at some convenient stage of the student's progress, a repetition of what he has already learned, in order to prove that he retains his past acquisitions. It is of the nature of those cross examinations, that prevail in our courts of judicature, by which the evidence that before appeared plausible or correct, often proves to be fallacious. A similar necessity obtains in the classical department: a boy must be in the habit of both reading and writing Latin before he can be proficient. In reading he attends chiefly to the sense of his author; but in writing, he becomes solicitous about the mood, tense, case and concord; and thus what the first method left undone, is effected by the second. 3dly. To furnish every accommodation that can be requisite, a small key to the problems or examples proposed for solution, will be given at the end of the volume. 4thly. *A synopsis, or memorial view of all the principal points of the science, will be furnished for practical purposes*, in its proper place. 5thly. And additional exercises will also be added at the end of the work, consisting either of examples not in syllogistic form, proposed for reduction into regular order; or of *apparent* syllogisms for the detection of the fallacies they contain. 6thly. And to the work will also be added, for the convenience of all engaged in teaching, examples of logical parsing with suitable parsing exercises.

Throughout the whole of this work, it has been the endeavor of the author to afford every facility for the purpose of either private or public instruction. In the latter, or for young persons, it will be proper, 1st. That the learner should every evening, commit to memory and study, two or more, according to his capacity, of the definitions, axioms or rules, contained in the treatise, and repeat them on the following morning. 2dly. And at the end of every section, that he should repeat the whole of that section, by learning it the second time, in order that it may be more completely infixed in his memory. 3dly. Before he proceeds to a higher class, it is recommended, that his proficiency should be examined and his recollection confirmed, by the interrogatory exercise at the close of the chapter. 4thly. It is peculiar to this volume to be arranged for the purpose of enabling the tutor to convene together, once a week, all his pupils learning the art, in classes or otherwise, for the purpose of collective examination, and mutual argument or disputation, on subjects or syllogisms that might be selected for the purpose, at the discretion of the tutor.

It was the intention of the present writer to notice particularly the several authors to whom he is, in the production of this volume, more or less indebted. But in a work, the original intention of which was to unite as far as possible the various excellencies of every treatise of eminence, quotations would naturally abound. In such cases it is usually deemed sufficient to make the acknowledgment once for all. The frequent alterations made in the language, and the inconvenience of crowding the page with names, tend to justify the exclusion of perpetual reference. To concentrate every useful illustration and improvement is a duty indispensably incumbent on every author. We infer the propriety from its evident advantage, the sanction from universal custom, and the warrant from Seneca, who observes, " we ought to imitate the bees, that wander up and down, and taste the flowers eligible for the production of honey. What they collect, with a certain mixture and peculiar property of their own, they change into its sweetness. These bees we ought to imitate, and to analyze whatever we from various reading treasure up. Then the care and energy of our own genius being added, to transfuse these various extracts into one flavor. So that even if it should appear, from whence it had been taken, it may, however, appear, something else than those from whence it was taken."*

* " Apes debemus imitari, quæ vagantur, et flores ad mel faciendum idoneos carpunt: et quæ collegerunt, in hunc saporem mixturâ quâdam et proprietate spiritûs sui mutant, nosque has apes debemus imitari, et quæcunque ex diversâ letione congessimus, separare, Deinde adhibitâ ingenü nostri curâ et facultate, in unum saporem varia illa libamenta confundere ut, etiam si apparuerit unde sumptum sit, aliud tamen esse, quam unde sumptum est, appareat."—*Seneca.*

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ANALYTICAL INTRODUCTION.

WHETHER the Analytic or Synthetic mode of communicating instruction, at least for initiatory purposes, is the more eligible, is a question that may frequently demand the consideration of those on whom that important duty devolves. The former mode presents a *whole* subject, or, at least, as much of it as is essential to the purpose; and after the necessary remarks on its nature and object as a whole, proceeds to develope that nature, and to point out how that object, through the proper connexion, is ultimately acquired, by a methodical and judicious analysis and dissection of the whole subject into its component parts and subdivisions. The Synthetic method, on the contrary, begins with those several subdivisions and parts, pointing out the particular use of each and its dependancy on another, until from the smaller we arrive at the larger divisions, and from these to the whole, and to the exemplification of its use and service in the business of private and social life. On this plan it is sometimes necessary that the patience of the learner should be a little exercised, whilst he is attending to the mere elements, of the ultimate advantage of which he can form no conception, until he arrive at that stage of the science, where he can perceive all that benefit and service it may be of to himself and others, which before he could by no means appreciate. To obviate, however, this temporary inconvenience, and to embrace every advantage arising from the Synthetic process, otherwise the more perfect of the two, lecturers about to deliver an entire course on any science, frequently preface the series with an opening or introductory lecture, in which the Analytic mode, the more preferable for an initiatory purpose, is first adopted; that is

the whole subject, or as much of it as is possible, is presented, and afterwards its parts are consecutively developed. Attention being thus secured, the lecturer is afterwards at liberty to employ the Synthetic or any other mode more eligible for his purpose.

The beautiful introduction of Dr. Paley to his Natural Theology is a subject of frequent remark. We have, as it were, at once a picture before the imagination. We see an Indian—one altogether unacquainted with the arts and productions of civilized life—a watch, what he had never seen before, and that too in movement, implying pre-existent design, is lying on the ground before him! And he, as might be expected, is in a state of wonder and astonishment. At what? At the watch as a *whole*, certainly, and that whole in a state of successful and instructive operation. Now, on the contrary, if the watch, instead of being there in its whole and entire state, in which it exemplified utility and design, had been previously taken to pieces and disconnected, exemplifying neither motion nor design in its construction, the state of his surprise or excitement would have been very different, his attention would have been withdrawn and transferred to his bow, his arrows, and the chase, and he would have remained an Indian still.

For reasons, therefore, now explained, we shall devote this introductory chapter to the analytic explanation of Logic. The necessary consequence not only of the intellectual character of man, but of the singular peculiarity of the situation and circumstances in which he is placed;—placed not only before one or many watches, but surrounded by systems, small and great, above, below, and on every hand, in endless train and countless succession, is, that he is a reasoning being, one necessarily employed in successive argumentation. Man reasons, argues, necessarily, unavoidably, not only as it refers to his own mind, but also to the numberless characters with whom he is or may be engaged. But that man necessarily reasons, and reasons always rightly, are as much two things, as that watches go, and go always rightly. Were the movements of our reasoning as ordinarily correct as those of the chronome-

ter, there would, comparatively, be little need of Logic; but the uniform testimony of history and common experience declare that, in this case, there are many watches out of repair, and that, therefore, not only a regulator, but all the regulation we can attain, is as well for the benefit of the individual, as for that of society at large, imperatively required.

If man is, and has been always reasoning, he has been reasoning now for near six thousand years. And this fact alone presents a serious and very important inquiry. We perceive in a moment a defect of a very alarming nature; for except as to the arts, and to the exact sciences, and to certain concerns of a mercenary character, to how little purpose, as to all the moral and intellectual excellencies of which we are capable, have thousands of our fellow men, in this and every preceding age, reasoned! and how little has every succeeding generation learned from the foibles of all that have preceded it! Had all this great defect been supplied, from age to age, by men not only reasoning, but reasoning accurately, and on subjects most important to themselves, we should not to this day, whether in governments or in the domestic circle, have inherited, to so lamentable an extent, all the failings of our fathers. Is this then a proof that *common sense*, in many cases, *a sense too common*, is a sufficient guide?

It will not be inferred by any reflecting character, that we mean by this to intimate that the *mere* art of Logic, however excellent in its place, could, *without its practical application*, adequately supply a defect so alarming in extent as the one to which we have just alluded. Neither Logic merely in the book, nor Logic unapplied to subjects that essentially concern us, nor without carrying out into practice the precepts, that we may, if we will, correctly deduce from proper premises, will do any thing. Nevertheless, it cannot be denied that the art of Logic, and the principles it affords, rightly understood, correctly applied, and conscientiously obeyed, would, though not the only regulator, have a powerful influence on the human mind, and a more extensive and happier influence in every department of society, than it is, at present, possible to appreciate.

Neither do we intend to deny that men can reason without the art of Logic, on some subjects correctly, though on others the reasoning is blended with fallacy, which they themselves are unable to detect. But they are liable also, as every day's experience testifies, to be imposed on by the sophisticated reasonings of others, without being able to expose their illogical conclusions: or to anticipate precisely on what ground an opponent may meet an argument apparently correct and complete in itself.

Every *argument* terminates with a *conclusion* relative to which our inquiries have been directed. And every conclusion is deduced from two propositions, called *premises.* In an argument briefly expressed, though one of these premises is suppressed, it is nevertheless understood as admitted. That this is the fact becomes evident by supposing a denial of the suppressed premiss, which immediately invalidates the argument. Suppose that one unfolding the vast volumes of nature, arrives by the *inductive* process, which we shall hereafter explain, at the conviction that "*the world exhibits marks of design;*" the irresistible conclusion, in his own mind, from this is, that "*therefore it must have had an intelligent author.*" The whole argument in this state may be expressed in one compound proposition, which is the form in which it is called an Enthymeme, or an argument with one of the premises suppressed. In this state it stands thus:

"The world exhibits marks of design; therefore
It must have had an intelligent author."

One inquiring, if this argument, as it is, is complete, will readily perceive, that if it be *denied,* that "*Whatever exhibits marks of design must have had an intelligent author,*" that the affirmative of this proposition is necessary to the validity of the argument. Thus then we have, by merely supplying the suppressed premiss, the complete Syllogism or argument, as follows:—

"Whatever exhibits marks of design must have had an intelligent author.
"The world exhibits marks of design; therefore
The world must have had an intelligent author."

It is evident, therefore, that the Syllogism is not a peculiar

kind of argument, but only a peculiar *form*, to which every argument may be reduced.

Whilst the argument remains in the form of the Enthymeme, viz:

> "The world exhibits marks of design; therefore
> It must have had an intelligent author,"

the atheist must accept one or the other of the two following alternatives: he must deny either, 1st, that the world does exhibit marks of design; or 2dly, that it follows from thence that it had an intelligent author. In the former case he denies the force of the *expressed* premiss; in the latter, of the *suppressed:* if both be admitted, the conclusion properly connected with them, inevitably follows. By supplying the suppressed premiss, and reducing the whole to the Syllogistic form, the whole of the atheist's opposition must be met within the scope of the first proposition; if he fail there, his cause is lost.

We have now the whole syllogism before us, and are enabled to discover something relative to the difference between a common argument, or enthymeme, and a complete argument, or syllogism. But as syllogisms as well as enthymemes may be incorrectly as well as correctly constructed, we should be able, if we would be successful in argumentation, to take a syllogism to pieces, examine its component parts, discover if a part is wanting, or there is one too many, and if the parts are properly connected. This is analysis, from which, prior to our attention to further explanation, we may derive much instruction.

The first thing that will occur in our analysis of the regular syllogism is, that it consists of three propositions, the two former of which, when regularly constructed, are the *premises*, and the last is the *conclusion*. By a *proposition* we are to understand, *a sentence containing* TWO TERMS, *the subject and the predicate, whereof one is affirmed or denied of the other*, as

First Term.	Copula*	Second Term.
All rational animals	are	men.

* The Copula is that *verbal connection* of the subject and predicate of a proposition, which affirms or denies the latter of the former.

And with equal facility we shall perceive the distinction between the SUBJECT and the PREDICATE, or the two terms that must exist in every proposition, by remembering, that, *the subject of a proposition is that term of which something is affirmed or denied* and that the *Predicate of a Proposition is that term which is affirmed or denied of its subject;* as

Subject. Predicate.

All rational animals are men.

And lastly, by A TERM, we are to understand, *any word or words which may be the subject or predicate of a proposition:* so in the above example, the word "men" is a term, and "rational animals" is another, though that term consists of more words than one.

If a syllogism then consists of three propositions, and each proposition of two terms, there must be six terms in the full extent, *though not six distinct terms,* in every proposition; as

1 2

All thinking beings are spirits.

3 4

The mind is a thinking being; therefore

5 6

The mind is a spirit.

But of these *six, only three are distinct terms:* to render this evident, we shall mark them again; as,

3

All thinking beings are spirits.

The mind is a thinking being; therefore

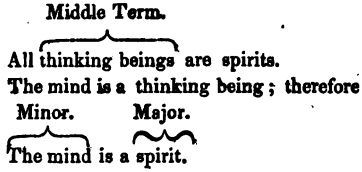
2 1

The mind is a spirit.

And in a proper syllogism, it will be impossible to find any other term distinct from the three principal terms of the syllogism; which are THE MAJOR, THE MINOR, and THE MIDDLE TERMS.

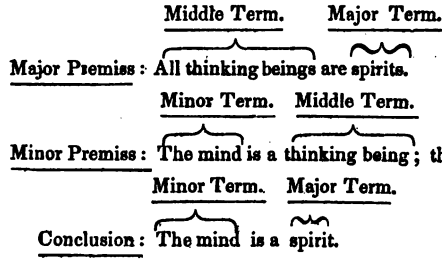
The major term is the predicate of the conclusion; in the above example "spirit," *the minor term is the subject of the same conclusion, viz:* "mind;" *and the middle term is that with*

which each of the other terms are separately compared in the premises; as "thinking beings."



The major term is commonly more comprehensive than the medium; as the medium is than the minor. This, however, will be better explained hereafter.

Knowing now these several terms, and to which reference can at any time be made, we shall be able to attach the names given by logicians to each of the propositions respectively: we have to remember, that *the major premiss is that which compares the major term with the middle term; the minor premiss is that which compares the minor term with the middle term; and the conclusion compares the minor term with the major;* as



For the establishment of the general law for the regulation of the syllogism, we are indebted to ARISTOTLE: it may be thus expressed.

"*Whatever is predicated, affirmed or denied, universally, of any class of things, may be predicated in like manner, affirmed or denied, of any thing comprehended in that class.*"

As a frequent reference to this principle will be found generally serviceable, it should be well remembered. Relative to this general rule, Dr. Whately makes the following remarks:

"It is not a little remarkable that some, otherwise judicious

writers, should have been so carried away by their zeal against that philosopher, as to speak with scorn and ridicule of this principle, on account of its obviousness and simplicity; though they would probably perceive at once, in any other case, that it is the greatest triumph of philosphy to refer many, and seemingly very various phenomena to one, or a very few, simple principles; and that the more simple and evident such a principle is, provided it be truly applicable to all the cases in question, the greater is its value and scientific beauty. If indeed, any principle he regarded as *not* thus applicable, that is an objection to it of a different kind. Such an objection against *Aristotle's dictum*, no one has ever attempted to *establish* by any kind of proof. But it has often been *taken for granted.* It has been commonly supposed, without examination, that the syllogism is a *distinct kind of argument*, and that the rules of it accordingly do not apply, nor were intended to apply, to all reasoning whatever. Under this misapprehension, Dr. Campbell* labors with some ingenuity, and not without an air of plausibility, to show that every syllogism must be futile, because the premises virtually assert the conclusion: little dreaming of course, that his objections, however specious, lie against the *process of reasoning itself universally;* and will therefore, of course, apply to those very arguments which he himself is adducing.

"It is much more extraordinary to find another eminent author† adopting expressly the very same objections, and yet distinctly admitting, within a few pages, the possibility of reducing every course of argument to a series of syllogisms. The same writer brings in an objection against the dictum of Aristotle, which it may be worth while to notice briefly, for the sake of setting in a clearer light the real character and object of that principle. Its application being, as has been seen, to a regular and conclusive syllogism, he supposes it intended to prove and *make evident* the conclusiveness of such a syllogism; and remarks how unphilosophical it is to attempt giving a

* Philosophy of Rhetoric.

† Dugald Stewart: Philosophy, vol. ii.

demonstration of a demonstration. And certainly the charge would be just, if we could imagine the logician's object to be, to increase the certainty of a conclusion which we are supposed to have already arrived at by the clearest possible mode of proof. But it is very strange that such an idea should ever have occurred to one who had even the slightest tincture of natural philosophy, for it might as well be imagined that the design of a natural philosopher or chemist is to strengthen the testimony of our senses by *à priori* reasoning, and to convince us that a stone when thrown will fall to the ground, and that gunpowder will explode when fired; because they show that according to their principle those phenomena must take place as they do. But it would be a mark of the grossest ignorance and stupidity not to be aware that their object is not to prove the existence of an individual phenomenon, which our eyes have witnessed, but, as the phrase is, to account for it, i. e. to show according to what general principle it takes place, and therefore cannot be otherwise; to refer, in short, the *individual* case to a *general* law of nature. The object of Aristotle's dictum is precisely analogous: he had, doubtless, no thought of adding to the force of any individual syllogism; his design was to point out the *general principle* on which that process is conducted which takes place in each syllogism. And as the laws of nature, as they are called, are in reality merely *generalized facts*, of which all the phenomena coming under them are only particular instances, so the proof drawn from Aristotle's dictum is not a distinct demonstration brought to confirm another demonstration, but is merely a generalized and abstract statement of *all* demonstrations whatever falling under that law; and is, therefore, in fact *the very demonstration* which (mutatis mutandis) accommodated to the very subject-matter, is actually employed in each particular case.

"It is a mistake, which might appear scarcely worthy of notice, had not so many writers fallen into it, to imagine that Aristotle, and other logicians, meant to propose that the form of unfolding arguments should universally supersede in argu-

mentative discourses, the common forms of expression. Aristotle has even been charged with inconsistency for not uniformly doing so. As well might a chemist be charged with inconsistency for making use of any of the compound substances whose qualities are already ascertained, without previously analyzing on every occasion, and resolving them into their simple element. The chemist keeps by him his tests, and his method of analysis, to be employed when any substance is offered to his notice, the composition of which has not been determined, or in which adulteration is suspected. Now a fallacy may be aptly compared to some adulterated compound: it consists of an ingenious mixture of truth and falsehood, so entangled, so intimately blended, that the falsehood is, in the chemical phrase, held in solution: one drop of sound logic is that test which immediately disunites them, makes the foreign substance visible, and precipitates it to the bottom."

Being now furnished with the regular form of the syllogism, its analysis into the parts of which it is composed, and the general law given by Aristotle, it will be proper to compare with that law the syllogism already quoted, viz:

Whatever exhibits marks of design had an intelligent author.
The world exhibits marks of design; therefore
The world had an intelligent author.

"In the first of these premises, we find it assumed universally of the class of things which exhibit marks of design, that they had an intelligent author; and in the other premiss, the world is referred to that class as comprehended in it: now it is evident that whatever is said of the whole class, may be said of any thing *comprehended in* that class; so that we are thus authorized to say of the world, that it had an intelligent author."

Now change this argument to one with a negative conclusion, viz:

Nothing which exhibits marks of design could have been produced by chance.
The world exhibits marks of design; therefore
The world could not have been produced by chance.

The conformity of this syllogism to the general law as

given by Aristotle, and the process of reasoning it institutes, are equally correct; since it is evident that whatever is *denied* universally of any class may be denied of any thing that is comprehended in that class.

Having obtained this introductory view relative to the nature and proper construction of a syllogism, and its conformity to the Arestotelean law, it will be further necessary to the more certain exclusion of fallacy, to attend to the following two rules, viz:

I. *The middle term must be distributed in one of the premises.*

II. *The major term must be compared with the middle term in the major premiss; and the minor term included in,* NOT EXCLUDED FROM, *the middle term, in the minor premiss.*

The following mode of finding the middle term will be easy to the youthful student, viz: look for both the minor and the major terms in the conclusion; for the minor, as we have already said, will be found to be the subject, and the major the predicate of the conclusion; and underline them, as in the following example.

Whatever is an enemy to truths essential to our welfare, is an enemy to man.
Prejudice is an enemy to truths essential to our welfare; therefore
Prejudice is an enemy to man.

In the conclusion we find two out of the three terms, 1st. The minor ("Prejudice;") and 2dly. The major term, ("an enemy to man.") Now as there is only one term remaining that is distinct from these two, on looking over the syllogism, we perceive, that the term, "*whatever is an enemy to truths essential to our welfare,*" is the only remaining term distinct from those we have already marked. As this is a very important term, draw two lines under it, and the syllogism with all its terms marked and properly distinguished will stand thus:

Whatever is an enemy to truths essential to our welfare, is an enemy to man.
Prejudice is an enemy to truths essential to our welfare; therefore
Prejudice is an enemy to man.

We shall give another example, as

No neutral* salt retains the property of either of the simples† composing it.
The Nitrate of Potassa,‡ is a neutral salt; therefore
The nitrate of Potassa, retains not the property of either of the simples composing it.

We have already the minor and major terms marked according to previous directions. We have yet one remaining term, the medium or middle term to mark. On inspection we perceive no remaining term distinct, except "neutral salt," found in the major premiss. The whole properly marked, and in a state proper for consideration when that middle term is distributed, according to the rule, will therefore stand thus:

No neutral salt retains the property of either of the simples composing it.
The nitrate of potassa is a neutral salt; therefore
The nitrate of potassa retains not the property of either of the simples composing it.

Knowing therefore the middle term, it only remains to inquire, if according to rule, 1st. the middle term *is distributed* in one of the premises; and 2dly, if the minor term is included in, and *not excluded from* the middle term in the minor premiss.

We shall begin with the former, and inquire if the middle term is *distributed?* A term is said to be distributed when it is taken universally so as to stand for every thing it is capable of being applied to; and consequently undistributed when it stands for a portion only of the things signified by it. To understand this correctly is a very important point in the art of reasoning; and as such demands explicit information. Our minute attention to it, therefore, requires no apology; we commence our inquiry with the first syllogism, in the state we last left it, viz:

Whatever is an enemy to truths essential to our welfare, is an enemy to man.
Prejudice is an enemy to truths essential to our welfare; therefore
Prejudice is an enemy to man.

* A salt is not neutral if it retains an excess of either of its component parts, as those distinguished with the prefixes, *super* or *sub;* as the *super*-sulphate of alumina and potassa; or the *sub*-carbonate of soda. These belong to distinct classes, which it is the province of chemistry to explain.

† A simple, or simple body, is a component part of a compound body.

‡ The nitrate of potassa, in common language, is called *salt*-petre: it has neither the property of the *nitric acid*, nor of *potassa*, of which it is combined; the one a powerful acid, the other a strong alkali.

Here the middle term is properly marked, and our inquiry is reduced to this one question, is it distributed? "taken universally for every thing it is capable of being applied to?" we answer, that it is impossible to conceive of any thing, that is an enemy to truths essential to our welfare, either by actively opposing them, or actively or negligently concealing them, but what is directly or indirectly, wilfully or negligently, an enemy to man. For first, nothing, not intellectual, can be said to be an enemy, though it may be an impediment; and secondly, that enmity to truths, can only be reduced to practice, either directly by opposition, or by concealment effected either actively and knowingly or negligently. If this be admitted, the *middle term* is distributed, and the major premiss stands undisputed, viz:

"Whatever is an enemy to truths essential to our welfare, is an enemy to man."

The remaining question is, is the minor term included in, and *not excluded from* the middle term in the minor premiss? In other words, does "Prejudice," the minor term, belong to the class described by the middle term? is it included in, and not excluded from the class, "Whatever is an enemy to truths essential to our welfare?" Because prejudice is here spoken of as one of the several things that are enemies to truths essential to our welfare, it belongs therefore to the whole class described by "whatever is," &c. The middle term is therefore distributed, and the minor term included; consequently the premises are correct, and the conclusion must inevitably follow.

But why is the following Syllogism incorrect or not conclusive?

Food is necessary to life,
Corn is food: therefore
Corn is necessary to life.*

Let us inquire here first, what is the proper meaning and

* It will be sufficient here, once for all to observe, that we shall, whenever it shall be necessary for explanation, to mark the terms, preserve the distinctions already specified; viz. the minor and major premises will be marked each with one, and the middle term with two lines drawn under them.

limit of the major premiss, which is, as it is here expressed, what logicians call "an *indefinite* proposition," or a kind of proposition that is sometimes *universal*, and sometimes *particular* in the extent of its meaning, according to its obvious signification. The sense is here, not *all kinds of food*, nor *every kind of food*, is necessary to life, either of which would constitute a *universal* proposition; but *some* food or some kind of food is necessary to life; i. e. a *particular* proposition. Here then, "the rule has not been complied with, since that which has been predicated not of the *whole*, but only of *a part* of the class, cannot be, on that ground, predicated of any other part of that class.

This is at once not only the most important, but also the most difficult, if not the only difficult point in Logic. To remove this difficulty, if such it be to any, no exertions of ours shall be omitted; and with a little attention on the part of the learner, we do not despair of success. If this bridge be passed, we have no other toll, worthy of the name of difficulty or exertion, to pay! We have then to attend only to the following rules, which in a short time we shall make plain to every one.

Propositions may, for the present purpose, be reduced to the following, viz. 1st, *A universal affirmative;* 2d, *A universal negative;* 3d, *A particular affirmative;* 4th, *A particular negative.*

Logicians mark these as follows:

A universal affirmative by A,
a universal negative by E,
a particular affirmative by I,
a particular negative by O.

To remember these symbols, which is of importance, the following memorial lines will assist us:

Universally, A affirms and E denies.
Particularly, I affirms and O denies.

A universal affirmative is a proposition wherein the predicate is affirmed of the whole of the subject: its usual signs are, *all, each, every*, &c.; or it may be an indefinite proposition, understood, according to its sense, universally, as,

All tyrants are unhappy,
Every wicked man is miserable,
Cuba is an island.

"Cuba is an island," though an indefinite proposition, yet in sense, it is equal to, "all Cuba is an island;" the proposition is therefore a universal affirmative.

A universal negative is a proposition wherein the predicate is denied of the whole of the subject; its usual signs are, *no, none, neither,* &c., as,

No discontented man is happy,
None of the ancient philosophers understood Fluxions.
Cuba is not a continent.

A particular affirmative is a proposition wherein the predicate is affirmed of only part of the subject; its usual signs are, *some, several, many, most, few,* &c., or it may be an indefinite proposition, understood according to its sense, particularly;

Some metals are heavier than iron,
Many parrots can talk,
Few men are truly wise,
Food is necessary to life.

The last proposition, "food is necessary to life, evidently does not mean, all food, or every kind of food, is necessary to life, but "some food is necessary to life;" the proposition is therefore a particular affirmative.

A particular negative is a proposition wherein the predicate is denied of only a part of the subject; its negative sign is commonly joined to the predicate; as

Some difficult things are not evils,
Many parrots cannot talk.

We shall now be able to understand the rule for the distribution of the middle term; viz:

All universal propositions distribute the subject, all negative the predicate.

If we apply this rule to the four following cases, and draw a line over every term, which according to it, we find distributed, they will stand thus,

A. All birds are animals,
E. No animal is a tree,
I. Some food is necessary to life.
O. Some metals are not heavy.

The first proposition is a universal affirmative, and therefore marked A. As it is a *universal*, according to the rule, the subject is distributed; i. e. all kinds of birds, eagles, parrots, ravens, sparrows, &c., are animals; since an animal is a being that has life, sensation and motion; and all birds have these properties. The subject, therefore, is here distributed; but not the predicate, for the term animal is applicable to millions of beings besides birds. No greater extension of the predicate is, therefore, here implied than is sufficient to embrace the subject, "birds." This will be immediately perceived by inverting the proposition; thus—

All animals are birds.

The falsity of this proves that the predicate of the original proposition, "all birds are animals," is not distributed.

The next proposition, "No animal is a tree," is a *universal* negative, and therefore marked E. As it is a universal, according to the rule, the subject is distributed; for no animal of any kind, is a tree. But as it is also a *negative* proposition, the predicate likewise, according to the same rule, is distributed. For the predicate not being restrained by a subject, to which it is declared inapplicable, is taken in the whole of its extension, and consequently distributed.

The third proposition, "some food is necessary to life," is a particular affirmative, and therefore marked I. It is not a universal; therefore according to the rule, the subject, "some food," is not distributed. "Some" evidently implies a portion of what is called food; the genus food, therefore, is not distributed. And as the proposition is not a negative, according to the rule, the predicate, "necessary to life implying other things beside food, or some food, is not distributed. The proposition must consequently stand as we found it, without a mark signifying distribution, thus—

Some food is necessary to life.

The last proposition, "Some metals are not heavy," is a particular negative, and marked accordingly O. It is not a univer-

sal, consequently its subjects is not distributed: we do not mean, any kind of metal, nor most kinds of metals, for most kind of metals are heavy. It is, however, a negative proposition, its predicate, "not heavy," is therefore distributed. For every thing implied in not heavy, that is, not heavier than water, is appliable to these metals, viz. the metals Potassium, and Sodium.

But the whole doctrine of distribution may be abundantly simplified; and by recollecting the signification of the symbols A. E. I. O., already given, viz. in the distich,

Universally, A affirms and E denies,
Particularly, I affirms and O denies.

It may be comprised in the following line,

A distributes the subject, O the predicate, I neither, and E both.

These three lines well remembered, and practised, as we shall proceed to exemplify, will enable us to overcome more than half of the difficulty implied in learning the art of logic.

In this exercise, and in the application of the above rules contained in the three lines just given, to determine whether the following syllogisms are correct or not, or, if there be fallacy, to point out the reason why the conclusion is illogical, proceed thus. First mark the minor and major terms, and also the middle term, as directed at page 35; then mark the propositions, according to their character by A. E. I. or O. Lastly by the rule, A distributes the subject, O the predicate, I neither, and E both; find what term is distributed, at least if the middle term is distributed or not, and mark* it, if distributed, with a line *over* it. Then, if the middle term be not distributed, or there be two middle terms, or the minor term in the minor premiss excluded from the middle term, no conclusion can logically follow:

E. No ruminant animals are predacious,
A. The lion is predacious; therefore
E. The lion is not ruminant.

Here the minor term is "*lion*," the major "*ruminant*," and are accordingly underlined with one line; no term distinct

* These marks we intend to adopt, whenever necessary, throughout this work. Their signification should therefore be remembered.

from these two remains, but "*predacious*;" it is therefore the middle term, and marked with two lines below; it is found also to be the predicate of the major premiss which being a negative proposition, it is therefore distributed according to rule, (E distributes both) and therefore marked also with a line above. The minor term also, "lion," in the minor premiss, is included in the middle term, or class of animals called "predacious" in the major premiss; the syllogism therefore is valid, and the conclusion regularly deduced; the syllogism, however, is reducible to a form, more strictly according to the Aristotelian dictum, thus,

E. No predacious animals are ruminant,
A. The lion is a predacious animal; therefore
A. The lion is not ruminant.

The three terms are found and marked as before. But why is the middle term, "predacious animals," here the subject of the proposition E, distributed? Because the rule says E distributes both; i. e. both subject and predicate. The minor term in the minor premiss also, is included in the middle term in the same premiss; the argument is therefore conclusive.

The following are not regular.

I. Some food is necessary to life,
A. Corn is food; therefore
A. Corn is necessary to life.

The proposition I, according to the rule, distributes neither, i. e. neither the subject nor the predicate; therefore the subject, or middle term, in the major premiss, is not distributed, does not amount to a whole class, but to only a part of the class, "food;" and "food" in the minor premiss, may be another part of the same class, not the same part of that class; there are here then two middle terms, and the minor term is included in *a* middle term food, which middle term is not necessarily *the same* middle term as we find in the major premiss. For some food, not specifying what part of food, is affirmed to be necessary to life, but corn may be *another* part, not the

same part which is affirmed to be necessary to life. The whole syllogism, therefore, logically, proves nothing; and the construction is not that of the regular form of the Aristotelian dictum: again;

A. Every rational agent is accountable.
E. Brutes are (not rational agents.)
E. Brutes are not accountable.

We find here, that "*rational agents*" in the major premiss is the middle term. It is distributed; because A distributes the subject. But from the whole class of beings, by the middle term designated "rational beings," the minor term is excluded in the minor premiss and compared with another term or class, viz. "not rational beings," very distinct from the former. Consequently here are four terms instead of three, and nothing is proved. If the above could prove any thing, so could the following,

A. Every horse is an animal.
E. Sheep are (not horses.)
E. Sheep are not animals.

Here the minor term is not included in, but excluded from the middle term in the major premiss: thus there are four terms, *horse, not a horse, sheep, animals*, and consequently no proof: neither would the case be otherwise by alteration to,

A. Every horse is an animal.
E. No sheep is a horse.
E. Sheep are not animals.

For the minor term is again excluded from the middle term.

A. All capable of deliberate crime are responsible.
E. An infant is (not capable of deliberate crime.)
E. An infant is not responsible.

Though nothing in any *single* proposition is here denied, yet nothing is proved. Here the term "responsible" is affirmed universally of those "capable of deliberate crime;" it might, therefore, according to Aristotle's dictum, have been affirmed

of any thing contained in that class; but in the instance before us, nothing is mentioned as contained under that class, only the term "infant" is *excluded* from that class; and though what is affirmed of a whole class, may be affirmed of any thing that *is* contained under it, yet there is no ground for supposing that it may be *denied* of whatever is *not* so contained; for it is evidently possible that it may be applicable to a whole class and to something else besides; to say that all trees are vegetables, does not imply that *nothing* else is a vegetable. Nor when it is said that all who are capable of deliberate crime are responsible, does this imply that no others are responsible; for though this may be very true, it has not been asserted in the premiss: and in the analysis of an argument we are to discard all considerations of what *might* be asserted; contemplating only what *actually* is laid down in the premises. It is evident, therefore, that such an *apparent argument* as the above does not comply with the rule laid down, nor can be so stated as to comply with it, and is consequently invalid.

A. All wise legislators suit their laws to the genius of their nation.

A. Solon suited his laws to the genius of his nation,
A. Solon was a wise legislator.

Nothing contained in any proposition here, taken singly, is contradicted, yet thus connected nothing is proved; for the middle term, the *predicate* of a universal, is not distributed, for "A distributes the subject," not the predicate. The following is of the same character.

A. All vegetables grow.

A. An animal grows,
A. An animal is a vegetable.

These are both cases of undistributed middle, and therefore contrary to rule, and prove nothing. And though it is not denied that Solon was a wise legislator, yet this is no more proved by the former syllogism, than by the latter it is proved that an animal is a vegetable.

Relative to the *apparent* argument, "all wise legislators suit their laws to the genius of their nation: Solon suited his laws

to the genius of his nation; therefore, Solon was a wise legislator;" we have said that nothing in each of these three propositions is contradicted, viz: it is not contradicted, that all wise legislators suit their laws to the genius of their nation; it is not contradicted, that Solon suited his laws to the genius of his nation; nor is it contradicted that Solon was a wise legislator; yet these three propositions thus combined constitute no argument, and however true it was that Solon was a wise legislator, yet there is nothing here to prove it: the syllogism as expressed is irregular, and proves nothing. Since the reason of this may not appear evident to every one, some further explanation may be here requisite, which we shall give by examining first the following argument.

A. A religion attested by miracles is from God.

A. The Christian Religion is a religion attested by miracles.
A. Therefore, the Christian Religion is from God.

On examination of this syllogism, according to the rules already given, we find, that "a religion attested by miracles" is the middle term; it is the subject of the major premiss, a universal affirmation, or A, and therefore distributed, for "A, distributes the subject. "We here, in this major premiss, find it asserted universally of a whole class, that "a religion attested by miracles," is from God: in the minor premiss, the Christian Religion is referred to, and included in that class; and according to the general law "whatever is said of the whole class, may be said if any thing comprehended in that class:" therefore we are duly authorized to say of the Christian Religion, that it is from God.

But will the following equally well bear examination?

A. All wise legislators suit their laws to the genius of their nation.

A. Solon suited his laws to the genius of his nation; therefore
A. Solon was a wise legislator.

We here find that, "suit their laws to the genius of their nation," is the middle term, and being the predicate of a universal affirmative, or of A, is consequently not distributed; for "*A distributes the subject,*" not the predicate. Though it is

not easy to conceive that laws are suited to the genius of a nation by any other than wise legislators, yet there is nothing in the expression thus to limit it; indeed it is possible that some might suit laws to the genius of their nation to answer some sinister purpose, in which they would not be wise legislators. But whether this might or might not be the case, the expression does not limit it. And Logic, as we have already said, has chiefly to do with the third act of the mind, reasoning, and that mode of expression which duly compares, by distribution, the middle term with the major term in the major premiss; and includes the minor term in the said middle term in the minor premiss; from two such premises a conclusion may logically follow.

But if the following proposition could be proved, viz: that

None but wise legislators
Suit their laws to the genius of their nation,

we could proceed with the argument, for the above proposition being a universal negative, or E, has the predicate, or middle term, as well as the subject, distributed; for E distributes both.

On this point Dr. Whately remarks, "it is a universal rule that the predicate of a negative proposition is distributed, and of an affirmative undistributed. The reason of this may easily be understood by considering that a term which stands for a whole class may be applied to or affirmed of any thing comprehended under that class, though the term of which it is thus affirmed may be of much narrower extent than that other, and may, therefore, be far from coinciding with the whole of it: thus it may be said with truth, that 'the negroes are uncivilized,' though the term 'uncivilized' be of much wider extent than negroes, comprehending besides them, Hottentots, &c., so that it would not be allowable to assert, that '*all* who are uncivilized are negroes;' and the same reasoning applies to every affirmative proposition; for though it may so happen that the subject and predicate, in some cases, are of equal extent; as 'all men are rational animals,' 'all equilateral triangles are equiangular;' (it being equally true, that 'all rational animals are men,' and that all 'all equiangular

triangles are equilateral') yet this is not *implied by the form of the expression;* since it would be no less true that 'all men are rational animals,' even if there were other rational animals besides men. These propositions which are reciprocal, however, are not very common: we may say, 'all parrots are birds,' but we cannot say, 'all birds are parrots.'"

The same defect applies to the Syllogism,

A. All vegetables grow.

A. An animal grows.
A. An animal is a vegetable.

viz: an undistributed middle. The middle is here, the predicate of a universal affirmative, and *A distributes the subject;* the middle term "grow," therefore, is not distributed: there is vegetable growth and animal growth; in the former sense it is taken in the major premiss, in the latter in the minor; consequently here are two middle terms, not "*one and the same third,*" and therefore there are four terms, instead of three in the syllogism. That the term "grow" is not distributed in the major premiss, we immediately perceive by inverting it thus—

There is nothing that grows but vegetables.

And from a false premiss, of course, nothing can be proved. This subject will be resumed under the chapter of Fallacies.

"It is, therefore," says Dr. Whately, "not sufficient for the middle term to *occur* in a universal proposition; since if that proposition be an affirmative, and the middle be the predicate of it, it will not be distributed. If, however, one of the premises be negative, the middle term may then be made the predicate of that, and will thus be distributed.* All reasoning whatever, then, rests on the one simple principle laid down by Aristotle, that '*what is predicated, either affirmatively or negatively, of a term* DISTRIBUTED, *may be predicated in like manner, affirmatively or negatively, of any thing contained under that term.*' So that when our object is to prove any proposition, i. e. to show that one term may rightly be affirm-

* See the rule page 41, or the rule, A distributes the subject, O the predicate, I neither, and E both.

ed or denied of another, the process which really takes place in our minds is, that we *refer* that term (of which the other is to be thus predicated) to some *class*, (i. e. *middle* term) of which that other may be affirmed or denied, as the case may be. *Whatever the subject matter of an argument may be, the reasoning itself, considered by itself, is in every case the same process:* and if the writers against Logic had kept this in mind, they would have been cautious of expressing their contempt of what they call 'syllogistic reasoning,' which is in truth *all* reasoning; and instead of ridiculing Aristotle's principle for its obviousness and simplicity, would have perceived that these are, in fact, its highest praise; the easiest, shortest, and most evident theory, provided it answers the purpose of explanation, being ever the best;" and *it is the most effectual, certainly, for the detection of fallacies, which constitutes no small part of its excellency.*

So much of the system of Logic, as may serve for an introduction is now explained by the preceding *analytic* developement; we now therefore proceed to the more regular and complete discussion of the subject, according to the *synthetic* mode of instruction.

SYNTHETICAL COMPENDIUM.

PART I.

CHAP. I.

On the operations of the mind.

(Art. 1.) The operations of the mind immediately concerned in argument are three. 1st, *Apprehension.* 2d, *Judgment.* 3d, *Argumentation.*

1. Logic is not concerned with any faculty or act of the mind except those employed in argumentation. Jamieson has enumerated not less than twelve distinct powers of the mind besides the passions. (li. c. vii.) But to determine what these are, or how they should be distinguished, is the province of mental philosophy or metaphysics, and irrelevant to our present purpose. See Jamieson's Grammar of Intellectual Philosophy, Reid on the Powers of the Human Mind, and Dugald Stewart's Elements of Mental Philosophy.

(Art. 2.) APPREHENSION is that act of the mind by which the idea of an object is formed; it it is either *simple*, as of a man, a horse; or *complex*, as of a man on horseback.

1. By apprehension we may form an idea of *material objects*, as, a mountain, a tree, a field, an animal; *of qualities*, as high, low, swift, clear; *of acts or passions*, as, to build, to be built; *of beings or qualities, abstract or intellectual*, as space, time, motion, justice, virtue, mercy, spirit, &c.

2. By writers on mental philosophy, the media through which we are said to receive and retain ideas, are *perception, consciousness, attention* and *reflection.* Perception is the medium through which we receive ideas of the powers and qualities of the material objects about us: its instruments are the five corporeal senses, seeing, hearing, feeling, tasting and

smelling. By some *sensation and perception* are distinguished. The change immediately produced in the mind by the impression of an object, hard or soft, rough or smooth, hot or cold, on the organ of sense, is denominated *sensation*. The word perception, in contradistinction to this, is by them employed to denote the knowledge that we gain by the sensation, of some quality in the object, retained after the object is removed. By *consciousness* is signified the faculty of noticing things of an immaterial character. And by *attention*, that which detains for our examination ideas to the exclusion of others that would solicit our notice. Dr. Reid says that attention to things external is properly called observation, and attention to the subjects of our consciousness, *reflection*.

3. But what is received through the medium of sensation perception, and consciousness, or retained through attention and reflection, is an idea. It is sufficient, therefore, for the logician to employ a general expression, or generic term, comprising all these, viz: "*apprehension*," meaning simply that act of the mind by which an idea, by whatever medium, is received.

(Art. 3.) JUDGMENT is that act of the mind by which two ideas are determined to agree or disagree;

1. Take for example these two ideas, *picture, beautiful;* if they agree, the judgment is expressed by pronouncing that *picture is beautiful;* or these other two, *war, beneficial;* if they do not agree, our judgment is declared by saying the *war is not beneficial.*

2. Judgment can only be expressed by a proposition; and a proposition is a complete sentence; but simple apprehension may be expressed by a word or words, which make no complete sentence. When simple apprehension is employed about a proposition, which it may be by two distinct acts, every one knows that it is one thing to apprehend a proposition, that is to conceive what it means; but it is quite another thing to judge if it be true or false.

(Art. 4.) ARGUMENTATION is the act of proceeding from one judgment to another, consequent on the former.

1. Argumentation, instead of the term reasoning, is here employed to avoid an ambiguity. We have already remarked that though with "assumed premises," "conjectural conclusions," "experiment," &c., reasoning, scientific

men and others are frequently concerned, yet argumentation or Logic is not.

2. The assertion that "man is accountable for his actions," is not proved from any thing in the proposition that contains it. But if it has been previously proved, 1st, "That every creature possessed of reason and liberty is accountable for his actions:" and 2dly, that "man is a creature possessed of reason and liberty," and consequently included in the whole class concerning which a judgment in the first proposition has been declared; it must necessarily follow from the two preceding premises, 3dly, that "man is accountable for his actions." This is argumentation regularly *expressed.*

(Art. 5.) Language affords the *signs* by which apprehension, judgment and argumentation are *expressed.*

1. "In introducing the mention of language previously to the definition of Logic," says Dr. Whately, "I have departed from established practice, in order that it may be clearly understood that Logic, as an art, *is entirely conversant about language:* a truth which most writers on the subject, if indeed they were fully aware of it themselves, have certainly not taken due care to impress on their readers."

2. Hence treatises on Logic have been encumbered with voluminous chapters on ideas, springs of false judgment, general directions to assist us in judging aright, special rules to direct our conceptions, &c. In one work of this kind, entitled a Grammar on Logic, 211 pages are occupied before we perceive any thing exemplified that was promised in the title-page. However excellent disquisitions of this character, in their proper place, may be, yet as to Logic, as we have already remarked, they are irrelevant.

3. The futility of such attempts is readily perceived by remembering that *ideas* are the mere types of the beings, material or immaterial, which they represent. To have the ideas we must be acquainted with the things of which they are the patterns; and to be intimate with these we must be conversant with the whole circle, the whole encyclopædia of human knowledge. To be acquainted too with a fact, or to have an object before us, and yet not a clear idea of it, implies some neglect in attention, or some defect in the mind; and Logic no more professes to supply a defect in the mind, than it does to create a mind, or to supply it with the sciences respectively which are the sources of our ideas; but it professes merely

to teach us, by a correct use of language, the deduction of argumentative consequences from such ideas or knowledge as we have.

4. But mere irrelevancy is not the only charge against such injudicious impropriety. The consequences have been, as facts have verified, that hundreds have taken up such works to ascertain what Logic is, or what it is not, and thus lost in fields of metaphysical discussion have either never obtained any definite idea of its specific and limited object, or misunderstanding it, have ignorantly loaded the art with the abuse, due rather to those who had mystified it in the clouds of their own misconceptions.

(Art. 6.) An act of apprehension, expressed in language, is called a *term*; of judgment, a *proposition*; and of argumentation, when regularly expressed, a *syllogism*.

1. Whereas in the expression of our apprehension, terms are liable to be indistinct; of our judgment, propositions to be false; and of our argumentation, deductions to be inconclusive,—Logic undertakes directly and completely to guard against this last defect; and incidentally, and in a certain degree against the others, as far as can be done by the proper use of language. Logic might, therefore, could it only be regarded as an art, be defined to be, *the art of employing language correctly for the purpose of argumentation.*

(Art. 7.) LOGIC, as a *science*, is that which comprises the principles on which argumentation is conducted; and as an *art*, it is that of employing the rules furnished by that science to secure the mind from error in its deductions.

1. "Logic instructs us in the right use of terms, and distinguishes their various kinds. It teaches the nature and varieties of propositions: explains their properties, modifications, and essential parts. It analyzes the structure of arguments, and shows how their truth may be discovered, or their fallacy detected. Lastly, it describes those methods of classification and arrangement, which will best enable us to retain and apply the knowledge which we have acquired."

2. "Though the understanding would be incapable of any high degree of improvement, without the aid of rules and principles, yet these are insufficient without practice and experience. The powers of the mind like those of the body

must be strengthened by use. The art of reasoning skilfully can be acquired only by a long and careful exercise of the reasoning faculty, on different subjects and in various ways. The rules of Logic afford assistance to this faculty not less important than that which our animal strength derives from the aid of mechanical powers. They guide its operations and supply it with suitable instruments for overcoming the difficulties by which it would be impeded in its search after truth." —*Hedge.*

INTERROGATORY EXAMINATION

ON

CHAP. I, PART I.

QUESTION 1st. What are the operations of the mind that are immediately concerned in argumentation? Art. 1.

Q. 2. What is apprehension? 2.

Q. 3. What act of the mind is that called by which we form an idea of an object? 2.

Q. 4. State the difference between simple and complex apprehension. 2.

Q. 5. What is implied, in treatises on Logic, by the word judgment? 3.

Q. 6. What act of the mind is that called by which two or more ideas are determined to agree or disagree? 3.

Q. 7. By what act of the mind is it by which you decide that, *a field is green, or a river is wide?* 3.

Q. 8. What do you mean by argumentation? 4.

Q. 9. What act is that by which we proceed from one judgment to another? 4.

Q. 10. What affords us the signs by which apprehension, judgment and argumentation are expressed? 5.

Q. 11. When an act of apprehension is expressed in language, what is it called? 6.

Q. 12. When an act of judgment is expressed, what is it called? 6.

Q. 13. When argumentation is regularly expressed what is it called? 6.

Q. 14. What is Logic? 7.

Q. 15. What is that art which employs rules to secure the mind from error? 7.

PART II.

ON TERMS.

CHAP. I.

On Terms simply.

(Art. 8.) A TERM is *one or more words* expressing the subject of a sentence, or what is said of that subject.*

1. First the subject itself may be expressed by one or more words; as *wisdom, man, a man on horseback, a troop of cavalry;* so also may what is said of any subject; as *valuable, rational being, passing, crossing the bridge.* All these, whether expressed in one or more words, are terms; so that one term may consist of many words. If we unite these several subjects, and what is said of them respectively, in sentences, we shall have two terms in each sentence and no more; as

1 2
Wisdom is valuable.
Man is a rational being.
A man on horseback is passing.
A troop of cavalry is crossing the bridge.

(Art. 9.) A SINGULAR TERM is that which expresses one individual, not considered as an individual of any class; as *Socrates*, the *Mississippi*, this *tree*, this *city*.

1. So likewise, this river, the city of London, the conqueror of Pompey, are singular terms, or terms which cannot be said or predicated of any thing else besides themselves; and are therefore to be denied of any thing else. We may say, this

* The above definition and mode of explanation are given to prevent the anticipation of the parts of a proposition, which cannot be here explained, as subject, copula and predicate: subject being a grammatical word is not liable to the same objection. For *a term is any word or words which may be the subject or predicate of a proposition.* Were it to require twenty words to express either the subject or predicate, still they would be only one term.

river is the Mississippi, or Cæsar was the conqueror of Pompey; but we cannot say of any thing else, that it is the Mississippi, or of any one else that he was the conqueror of Pompey.

(Art. 10.) A UNIVERSAL TERM is what can be applied to any individual or to all individuals of the same class; as *man, river, great.*

1. So tree, city, bird, conqueror. Universal terms, therefore, are called predicables, because they may be predicated or affirmed of others; as the Mississippi is a river, the Ganges is a river. So the term, city or conqueror, applies or may be predicated or affirmed of any or all that compose each of those classes respectively. Though any term singular or universal, may be a subject, none but a universal term can be affirmatively predicated of several others. But a singular term may be negatively predicated; as "the first born of Isaac was not Jacob."

2. "Universal terms make the greatest part of the words of every language. Every production of nature and art, and every property of mind and body, is an individual. Each has some properties peculiar to itself; and others, which it possesses in common with many other beings. By discarding the *peculiar* properties and retaining under distinct names those which are *common*, we reduce to a limited number of classes the innumerable objects which fall under our observation. This distinguishing things into classes forms what logicians call the *genera* and *species* of things."

(Art. 11.) A RELATIVE TERM is one which expresses an object in reference to another to which it is related; as *husband, father, patron.*

1. They are relative terms, since husband is related to wife, father to son, and patron to client: so rider, commander, guardian, king, are terms relating to horse, the forces commanded, ward, and subject. Nouns are sometimes called correlatives, when the co-existence of each term referred to is essential to the other; as king and subject.

(Art. 12.) AN ABSOLUTE TERM is one which expresses an object or quality without reference to any other; as *horse, river, roundness, strength.*

1. Thus the relative term father may be expressed absolutely, as man; or a son as boy.

(Art. 13.) A POSITIVE TERM is one which expresses an object or its attribute as actually existing; as, *speech*, a *man speaking*.

1. A positive term denotes at least that this view might conceivably be taken of the object; so "seeing" is spoken of a man, since the faculty of sight is a possible and common attribute of the being spoken of.

(Art. 14.) A PRIVATIVE TERM is one which expresses the absence of an attribute from a subject capable of it; as, a *deaf man*, a *blind horse*.

1. Since the terms "deaf" and "blind" express the absence of faculties from creatures commonly capable of them, they express a privation, and are therefore privative terms.

(Art. 15.) A NEGATIVE TERM is one which expresses the absence of an attribute from a subject not capable of it; as a *dumb statue*, a *lifeless carcass*.

1. As should it be said of a stone that it is inanimate, or blind or deaf; or of a clown, that he is unlearned, &c.; these are negations or negative terms.

(Art. 16.) AN ABSTRACT TERM is one which expresses a quality or attribute, without reference to any subject in which it may be found; as *justice*, *wisdom*, *folly*.

1. So whiteness, roundness, hardness, equality, firmness, length, breadth, depth, mortal; so the abstract terms, folly, knavery, philosophy, correspond to the concretes, fool, knave, philosopher.

(Art. 17.) A CONCRETE TERM is one which expresses both the quality or attribute and the subject to which it belongs; as *just*, *wise*, *foolish* or *fool*.

1. Concrete terms are not always adjectives in a grammatical sense; for fool, knave, or philosopher, though nouns, are concrete terms, referring to the subject as well as to the quality of it.

2. "Sometimes they express the subjects *directly* and the at-

tributes *indirectly;* and sometimes the reverse. Thus *statesman, mechanic,* are concrete terms, which *directly* denote persons, and *indirectly* the attributes for which they are distinguished. But *valiant, swift, hard,* are concretes, immediately signifying certain attributes and *indirectly* intimating the persons or things to which they belong.

(Art. 18.) An INDEFINITE TERM is one to which the particle *not,* (either expressly or in sense,) is attached, serving merely to exclude one individual or class, and leaving it undetermined what other individual or class should be understood; as "*not Cæsar,*" "*unorganized.*"

1. Every thing that can be conceived must be either Cæsar, or not Cæsar: if it is not Cæsar, who or what is it? There is nothing that can be both; so is there nothing that can be either. In like manner every thing is either organized or unorganized; corporeal or incorporeal. "In this way a complete two-fold division may be made of any subject, being certain, as the expression is, to exhaust it. And the repetition of this process, so as to carry on a subdivision as far as there is occasion, is thence called by logicians, 'abscissio infiniti,' i. e. the repeatedly cutting off of that which the object to be examined is *not;* e. g. This disorder either is, or is not, a dropsy —and for this or that reason, it is not; 2dly. any other disease either is, or is not, gout; this is not: then 3dly. It either is, or is not, consumption, &c. &c." This procedure is frequently serviceable in judicial pleadings.

(Art. 19.) A DEFINITE TERM is one to which the particle *not,* is not attached, and determines what individual or class, is understood; as, "*Cæsar,*" "*organized being.*"

1. "Terms are also distinguished into univocal, equivocal, and synonymous. UNIVOCAL terms are such as have invariably the same signification annexed to them. Thus individuality, genus, electricity, are univocal terms; for they always signify the same thing. EQUIVOCAL words are such as are employed in different senses; of this sort is the word *head* which may signify a part of a nail, of an animal, or of a discourse. So the words *post* and *shore* are equivocal, for they are used in various senses. That some words should be used in different senses is unavoidable on account of the scantiness of language, which does not afford a distinct name for every idea.

Notwithstanding this, we sometimes find two or more words applied to the same thing; as, *wave* and *billow*, *dwelling* and *habitation*. These are called SYNONYMOUS."

2. "The usual division of terms into univocal, equivocal and analogous, and into nouns of the first and second intention, are not strictly speaking divisions of words, but divisions of the manner of employing them. The same word may be employed either univocally, equivocally, or analogously; either in the first or second intention. The ordinary logical treatises often occasion great perplexity to the learner, by not noticing this circumstance." Every thing necessary on these distinctions will be found in the chapter on Fallacies.

INTERROGATORY EXAMINATION

At the end of

CHAP. I. PART. II.

Q. 1. What is meant by a term? Art. 8.

Q. 2. May a term consist of more than one word? 8.

Q. 3. In the declaration that "man is a rational being," how many terms are there? 8 note 1.

Q. 4. What is understood by a singular term? 9.

Q. 5. What is implied by a universal term? 10.

Q. 6. Which of the following two terms is singular, and which is universal, "this tree," "tree"?—so of "this river," "river?" 9. 10.

Q. 7. What is signified by a relative term? 11.

Q. 8. What do you imply by an absolute term? 12.

Q. 9. Of the two terms, "father," "man," which is relative, and which is absolute? 11 and 12.

Q. 10. What is meant by a positive term? 12.

Q. 11. What is expressed by a privative term? 14.

Q. 12. How do you explain a negative term? 15.

Q. 13. Of the three expressions, "a man speaking," "a deaf-man," "a dumb statue," which is positive, which privative, which negative? 13. 14. 15.

Q. 14. Assign your reasons for the one being positive, another privative, and the third negative.

Q. 15. How is a concrete term defined? 17. Note 1.

Q. 16. What is the definition of an abstract term? 16.

Q. 17. Are concrete terms always adjectives? 17.

Q. 18. Of the following pairs, distinguish which is a concrete, and which an abstract term, viz: just, justice; white, whiteness; round, roundness; fool, folly; knave, knavery.

Q. 19. Explain what is meant by an indefinite term. 18.

Q. 20. What do you understand by such expressions, as "not Alexander;" this disease is "*not a dropsy?*"

Q. 21. What is understood by a definite term? 19.

Q. 22. Of the two expressions as, Cæsar, not Cæsar, which is an indefinite and which a definite term?

Q. 23. For what reason is "organized" a definite term and unorganized an indefinite one?

CHAP. II.

On the opposition of Terms.

(Art. 20.) The OPPOSITION OF TERMS is that which exists between two terms that cannot both be applied to one single object at the same time; as *young* and *old.*

(Art. 21.) CONSISTENT TERMS are those which may be, at the same time, affirmed of the same thing; as *cold* and *dry.*

(Art. 22.) OPPOSITE TERMS are those which cannot be, at the same time, affirmed of the same thing; as "*black* and *white.*"

(Art. 23.) The opposition of terms is fourfold, between *relative, contrary, privative and contradictory* terms.

(Art. 24.) RELATIVE OPPOSITION is that which is between two relatives that cannot both, at the same time, be applied to the same subject: one may be *both master* and *servant,* but not at the same time to the same person.

(Art. 25.) CONTRARY OPPOSITION is that which is between two absolute terms, which expel one another from a subject capable of either; as *wise* and *foolish.*

(Art. 26.) PRIVATIVE OPPOSITION is that which is between a positive and privative term; as *seeing and blind.*

(Art. 27.) CONTRADICTORY OPPOSITION is that which is between a definite and an indefinite term; as "*a man and not a man.*"

1. This is the greatest of all oppositions; that which takes place "between any two terms, which differ only in having and wanting the particle not, either expressly or in sense, attached to them; as Cicero, or not Cicero; organized, or not organized; corporeal or incorporeal; for not only is it impossible for both these views to be taken at once of the same thing, but also, it is impossible but that one or the other should be applicable to every object." This opposition admits of no medium, neither a medium of participation, such as is grey between black and white; nor a medium of abnegation, such as is a stone between seeing and blind.

2. Relative terms, on the other hand, produce the least opposition, for relative terms are not opposites, unless they are considered with respect to the same thing, and at the same time.

INTERROGATORY EXAMINATION.

Q. 1. What is meant by the opposition of terms? Art. 20.
Q. 2. What kind of terms are those which are called consistent? 21.
Q. 3. What do you understand by opposite terms? 22.
Q. 4. How many kinds of opposition are there? 23.
Q. 5. What is relative opposition? 24.
Q. 6. What is contrary opposition? 25.
Q. 7. What is privative opposition? 26.
Q. 8. What is contradictory opposition? 27.
Q. 9. What kind of opposition is the most complete? 27 note 1.
Q. 10. What kind of opposition is the least? 27 note 2.

CHAP. III.

On the generalization of terms: and on terms predicable.

(Art. 28.) GENERALIZATION is that process by which the mind arrives at the idea of a whole class, species or genus, expressed by a *universal* term.

1. Thus in the contemplation of a large number of animals we observe that some of them are distinguished from the rest, because they have wings, are covered with feathers, and lay eggs. These by abstraction from the rest, we generalize by giving them a general name, or universal term, as "bird."

2. Generalization, it is plain, may be indefinitely extended by a further abtsraction applied to common terms: e. g. as by abstraction from the term "*Socrates*," we obtain the universal term "*philosopher*;" so from "philosopher" by a similar process we arrive at the more general term "*man*;" from "man" we advance to "*animal*;" from animal to "*created being*," &c.

3. We may thus generalize into whatever genus, species, or class we please, according to our purpose. "Any individual person to whom we direct our attention may be considered either in a political point of view, and accordingly referred to the class of merchant, farmer, lawyer, &c., as the case may be; or physiologically, as, negro or white man; or theologically, as Pagan, Mahommedan, Christian: or geographically, as European, American, &c. Thus it may suit a farmer's purpose to class his cattle with his ploughs, carts, and other possessions, under the name of '*stock*;' the naturalist suitably to his purpose classes them with '*quadrupeds*,' which term would include wolves, bears, &c., which to the farmer would be a most improper classification; the commissary again would class them with corn, fish, cheese, &c., as '*provisions*,' that which is most essential to one view being subordinate in another."

4. Though *generalization* is usually said to be the business of *abstraction*, it is only one of the purposes to which abstraction is applied. Thus a person when a rose is before him, may make the scent a distinct object of attention, laying aside all

thought of color, form, &c., and this, though it were the only rose he had ever met with, he would effect by abstraction. But if in contemplating several objects, and finding that they agree in certain points, we abstract, or chiefly regard the circumstances of common agreement, diregarding those wherein they differ from other objects, giving to the former a name applicable to them in respect of this agreement; i. e. a *universal term*, as *rose*, by this ABSTRACTION, we are said to GENERALIZE, by giving a general name wherein they all agree; abstraction, therefore, does not necessarily imply generalization, though generalization implies abstraction.

5. In the distribution of beings into *genera* and *species*, regard is had to the COMPREHENSION and EXTENSION of universal terms.

6. *By the* COMPREHENSION *of a term is meant the aggregate of all the known properties of a genus, species or class to which it is applied.* Thus if to be covered with feathers, to be oviparous, and to have wings, are properties common to all birds, the genus *bird* must *comprehend* no species to which these properties do not belong. When we say of any man, that he is a *mathematician*, this appellation comprehends all the attributes that belong to him, as *an animal*, as *a man*, and as *one who has studied mathematics.*

7. *The* EXTENSION *of a term regards the number of species into which a genus, or the number of individuals into which a species is divided.* Thus when we are taught that the three angles of a plane triangle are equal to two right angles, we are aware that this proposition *extends* to every species of plane triangle, and to every individual plane triangle which has existed, which does exist, or which can exist.

8. "A universal term, as 'man,' denotes no real thing, (as the Realists maintained) distinct from each individual, but merely *any* man, viewed so as to admit all that is peculiar to each individual; by which means the term becomes applicable alike to any of several individuals, or, in the plural, to several or all composing the order, genus or class together."

(Art. 29.) All *uuiversal* terms are called PREDICABLES, because they may be affirmatively *predicated* of any or of all the individuals of the class they respectively contradistinguish.

1. Thus "quadruped" is a universal term, and therefore a predicable, because it may be predicated of horses, dogs, elephants, &c., or of any or all of them; as "all elephants are

quadrupeds;" "this, that or the other horse is a quadruped;" or "horses, dogs, camels, deer, elephants, are quadrupeds."

(Art. 30.) There are five sorts of predicable words; as *genus, species, essential difference, property* and *accident.*

(Art. 31.) A genus is a term which is predicated of several classes or species as the common part of their essence; as *animal,* which includes man, beast, bird, fish, insect.

1. The naturalist, whether in the science of Zoology, Ornithology, Ichthyology, Entomology, Conchology, Botany, Mineralogy, &c., as well as the grammarian, the logician, the rhetorician, the moralist, the jurisconsult, the physician, and the mechanic, and in a word every man that professes any art or science, must have general and also special terms for expressing his sentiments in every branch of knowledge he would communicate to others. The several crimes, such as theft, murder, robbery, piracy, perjury, forgery, treason, &c., are only certain combinations of human actions, each having several subordinate species, defined in criminal law, and which it is found convenient to classify, as genera and species.

(Art. 32.) A SPECIES is a term which is predicated of several individuals, as their whole essence; so *man, beast, bird, fish, insect,* are the several species composing the genus animal.

1. In this distribution of things into genera and species, it is evident that the name of the species comprehends more attributes than the name of the genus. The species comprehends all that is in the genus, and those attributes likewise which distinguish that species from others belonging to the same genus; and the more such divisions we make, the names of the lower become still more comprehensive in their signification, but the less extensive in their application to individuals.

2. Thus of animal, man, European, Frenchman, Parisian, every subsequent term comprehends in its signification all that is in the preceding and something more; and every antecedent term extends to more individuals than the subsequent.

3. Hence it is an axiom in logic that the more extensive any general term is, it is the less comprehensive: and on the contrary, the more comprehensive the less extensive.

(Art. 33.) The ESSENTIAL DIFFERENCE is a term which is predicated of a species, as that part of its essence, which dis-

tinguishes it from any other species of the same genus; as "*rational*," which distinguishes the species, man, from any other of the genus animal.

1. Essential difference, as will be seen in the next chapter, always is indispensable in a logical definition. Thus by joining the genus, "animal," and the essential difference "rational," man is logically defined to be a "rational animal," for we do not apply the term rational to any other species, whether beast, bird, fish or insect of the genus "animal." So, "roundness" is the essential difference of a sphere, ball or globe, which distinguishes it from any other species of mathematical figures.

(Art. 34.) A PROPERTY is a term predicated of a species, as an attribute necessarily joined to its essential difference; as "*risible*" dependant on "rational," the essential difference of the species man.

1. So volubility or aptness to roll, is the "property" of a sphere, ball or globe, and dependant on its essential difference "roundness." And "shape" or "figure" is the property of matter, dependant on its essential difference, "solid extension."

(Art. 35.) An ACCIDENT is a term predicated of one or some indidividuals only of a species, as an attribute accidentally joined to the essential difference; as "*tall* or *short*."

1. An accident is such a mode as is not necessary to the being of a thing, for the subject may be without it, and yet remain of the same nature as it was before; so smoothness, or roughness, blackness or whiteness, motion or rest, are the accidents of a ball, or sphere, for these may be all changed or abolished, and yet the body may remain a ball still. So learning, ignorance, justice, folly, sickness, health, are the accidents of a man.

(Art. 36.) A GENUS is either the *highest* or a *subaltern*: a SPECIES is either a *subaltern* or the *lowest*.

(Art. 37.) The HIGHEST GENUS is that which is not considered as a species of any thing; as *substance*: the LOWEST SPECIES is that which is never a genus, as *greyhound*.

(Art. 38.) A SUBALTERN GENUS or SPECIES, is a genus when

predicated of a lower species, as *every man is an animal:* or a species when subjected to a higher genus; as *every animal is a substance.*

1. That general nature wherein one thing agrees with most other things, is also called its more remote genus: so *substance* is the remote genus of bird or beast, because it agrees not only to all kinds of animals, but also to inanimate things; as sun, stars, metals, stones, water, &c. But "animal" is the proximate or nearest genus of bird, beast, &c.; since "animal" agrees with nothing that has not life, sensation and motion. Those general natures, which stand between the nearest and most remote, are called *intermediate.*

ADDITIONAL NOTES.

1. Hence the "*essential difference*" is either *generical,* which added to the *genus* constitutes a *subaltern species;* as *sensible* predicated of animal when considered as a species of substance: or *specific,* which constitutes the lowest species, as "*rational*" predicated of man as a species of animal.

2. A *property* likewise is either *generical,* which is necessarily joined to the essential difference of the *highest* or *subaltern genus;* as *moveable: specific,* which is joined to that of the lowest species; as "*risible.*"

3. "But a property is commonly said to be four-fold. 1. Such as belongs to one species only, but not to every individual of it; as *to be a grammarian:*" this however should be regarded as an accident. 2. "Such as belongs to every individual of a species, but not to that species only, as *to have two feet.* 3. Such as belongs to one species and every individual, but not always, as *to turn grey haired,*" consequently an accident. 4. "Such as belongs to every individual of one species only, and that always; as '*risibility.*' It is such a property as this, which constitutes the fourth predicable."—*Wesley.*

4. "That is most strictly called a property," says Whately, "which belongs to the *whole* species, and to that species alone; as polarity to the magnet; for its essential difference as a species of mineral, is its 'attracting iron.' And such a '*property,*' it is often difficult to distinguish from the '*essential difference.*' But whatever you consider, as the *most essential to the nature* of a species, to contradistinguish it from other species of the same genus, "you must call the *essential difference:* as 'rationality' to man," contradistinguished by this essential difference from any other species of the genus animal;

and whatever you consider as rather a *result consequent on that essential difference*, you must call the *property*, as the 'use of speech' seems to be a result of rationality."

5. "But very many properties which belong to the *whole* of a species are not peculiar to it; as 'to breathe air' belongs to every *man*, but not to man alone; and it is therefore strictly speaking, not so much a property of the species 'man,' as of the higher or more comprehensive genus, as of 'land animal:' see No. 2 of note 3, page 65. Other properties, as some logicians call them, are *peculiar* to a species, but do not belong to the whole of it; e. g. man *alone* can be a poet, but it is not every man that is so. These, however, are more commonly reckoned as *accidents*." See No. 1. of note 2. page 65.

6. "That is more properly called an accident which may be absent or present, the essential difference of the species continuing the same; as for a man to be '*walking*' or a '*native of Paris*:' of these two examples, the former is what logicians call a *separable* accident, because it may be separated from the individual: (e. g. he may be sitting down;) the latter is an *inseparable* accident, being not separable from the individual (i. e. he who is a native of Paris can never be otherwise;) 'from the individual,' I say, because *every accident* must be separable from the species, otherwise it would be a *property*."

7. Some of the above remarks will be illustrated by reference to the subjoined syllabus.

ANIMAL.

- MAN.
  - European.
  - Asiatic.
  - African.
  - American.
- BEAST.
  - Bear, &c.
  - Dog.
    - Beagle, &c.
    - Greyhound.
    - Terrier.
    - Cur.
    - Spaniel
    - Mastiff.
  - Horse.
  - Squirrel.
  - Lion.
- BIRD.
  - Eagle.
  - Lark.
  - Duck.
    - English.
    - Muscovy.
    - Hook Bill.
  - Goose, &c.
- FISH.
  - Trout.
  - Whale.
  - Oysters, &c.
- INSECT.
  - Creeping.
    - Caterpillar, &c.
    - Worm.
    - Ant.
  - Flying.
    - Bee, &c.
    - Wasp.

INTERROGATORY EXAMINATION.

Q. 1. What process is to be understood by generalization? Art. 28.

Q. 2. When we are contemplating many objects, as all living creatures or animals, and perceive that one class of them, containing many individuals, differs from another class also containing many individuals, by a common peculiarity that renders that class distinct from any other; and proceed thus dividing all animals into classes, by what process is this done? 28.

Q. 3. With what terms does generalization supply us? 28.

Q. 4. What terms are they which are called predicables? 29.

Q. 5. Why are common terms called predicable? 29.

Q. 6. How many sorts of predicable terms can you enumerate? 30.

Q. 7. What is to be understood by a genus? 31.

Q. 8. Can you define the term species? 32.

Q. 9. Explain what you mean by essential difference. 33.

Q. 10. All *birds* have feathers, but the other species of the genus animal, as *man, beast, fish, insect,* have not; what then is that called which distinguishes *birds* from any other species of the same genus? 33.

Q. 11. What is the logical distinction of genus and species? 33.

Q. 12. State what you mean by the property of a species. 34.

Q. 13. Is "property" what is dependant on the essential difference of a species? 34.

Q. 14. If "rationality" distinguishes man from any other species of the genus animal, and "risibility" is a result of rationality, which is the essential difference, and which is the property? 33 and 34.

Q. 15. If "roundness" distinguishes a ball from any other figure, and an "aptitude to roll" is a result of roundness, which is the essential difference, and which the property? 33 and 34.

Q. 16. Explain what you mean by accident. 35.

Q. 17. Is accident necessarily connected with each and all the individuals of a species, or only with some and that occasionally? 35.

Q. 18. Were it said, "that *man* is a *rational animal, risible,* and also *tall,*" which word would indicate the *genus,* which the *species,* which the *essential difference,* which the *property,* and which the *accident?*

Q. 19. Were it said, "that a *white round ball* is a *figure* having an *aptitude to roll,*" what words would respectively express *genus, species, essential difference, property* and *accident.* ?

Q. 20. State what you mean by the highest genus. 37.

Q. 21. What is understood by a subaltern genus? 38.

Q. 22. What is a subaltern species? 38.

Q. 23. What is the lowest species? 37.

CHAP. IV.

On the Division and Definition of Terms.

(Art. 40.) The DIVISION of a *universal* term is that process by which we enumerate the distinct parts of which it consists.

1. Thus the universal term animal, is divided into the genera, man, beast, bird, fish, insect, &c. Again, any of these genera, as man, may be divided into European, Asiatic, African or American. And any one of these, by regarding it as a genus, into other divisions, as European, in English, French, German, Spaniards, &c: and so on till we come to the lowest species, which is never a genus and contains only individuals, as John, Thomas, William, &c.

2. "This operation is directly opposite to generalization; for as in that you lay aside the differences by which the individuals are distinguished so as to obtain the common term comprising the whole of a class, species or genus; so in division, you add on the differences, so as to enumerate them by their several particular names. Thus 'mineral' is said to be divided into stones, metals, fossils, &c. and metals into gold, silver, copper, iron, lead, &c. and these, when complete, are called the parts, or members, of the division."

(Art. 41.) The rules of division are three, viz:

Rule 1st. Let the members of the division, severally contain less (be of a narrower signification) than the word divided.

Rule 2d. Let them conjointly contain neither more nor less than the divided.

1. Therefore we must be careful to ascertain that the highest genus implied may be predicated of every term placed under it, and of nothing else.

Rule 3d. Let them be opposite, i. e. not contained in each other.

1. Were you to divide "book," into poetical, historical, folio, quarto, French, Latin, &c., the members would be contained in each other: for a French book may be a quarto, and a

quarto, historical, &c.; you must be careful therefore to keep in mind the principle of the division with which you set out, e. g. whether you begin dividing books, according to their matter, their language, or their size, &c.: all these being so many cross divisions.

2. "When any thing is capable, as in the above instance, of being divided in several different ways, we are not to reckon any one of these the proper one, without previously ascertaining what the object is which we have in view: for one mode of dividing may be the more suitable for one purpose, and another for another; as, e. g. one of the above modes of dividing books would be the most suitable for a book-binder, another in a philosophical, and the other in a philological view."

3. Illustration. GRATITUDE may be divided into 1st. a *consciousness* of favor received. 2. A *disposition* to acknowledge it on every proper occasion. 3. And a *resolution* to seize the first opportunity of returning a similar favor to the benefactor.

4. "Care must be taken not to confound a *physical* division with a *logical;* which beginners are apt to do, by introducing into the course of a division, the mention of the real parts of which an individual consists, and of each of which accordingly the whole cannot be affirmed."

5. Division, as employed in Logic, is a metaphorical expression. For to divide means literally to separate the component parts, each of which is, of course, less than the whole: e. g. a tree, might be divided *physically* into root, trunk, branches, leaves, &c. Now it cannot be said that a root or a leaf is a tree. But if the genus, animal, be divided logically into man, beast, bird, fish, insect, it may be said of each of these, that it is an animal. Moreover, in a logical division each of the members is in reality more, i. e. of greater comprehension than the whole; for by the word animal we understand only what may be affirmed of any of its kinds, but by the word beast we understand not only that, but in addition a quadruped; i. e. the idea of animal is only that of the *genus*, but of a part or species, that of *genus* and *essential difference.*

6. "It is plain then, that it is *logically* only, i. e. in our mode of speaking, that a genus is said to contain (or rather comprehend) its species; while metaphysically (i. e. in our conception) a species contains, i. e. implies its genus."

DEFINITIONS.

(Art. 42.) A DEFINITION is a sentence distinguishing a word or thing from any other; and is either NOMINAL or REAL.

1. It has been said that "a definition is a sentence *explaining* the word defined;" this, however, is only an *explanation*, and an explanation is not a *definition;* for an explanation may be such as to include some other individual, species or genus, whereas a definition must *absolutely limit, and consequently exclude every word or thing* but that defined, otherwise it would be *equivocal* or *ambiguous.*

2. Definition literally (from "finis" a limit) signifies "laying down a boundary," and is used in Logic to signify "an expression which so distinguishes any term, as to separate it from every thing else;" as a boundary separates one field from another.

(Art. 43.) A NOMINAL DEFINITION is that which distinguishes the MEANING OF A WORD from that of any other.

1. Thus the word "decalogue" might be defined to be the ten commandments; "telescope," an instrument for viewing distant objects; "microscope," an instrument for viewing small or minute objects; since there are no other words signifying the same things.

(Art. 44.) A REAL DEFINITION is that which distinguishes the NATURE OF A THING from that of any other; and is either *accidental or essential.*

1. Definitions are divided into nominal and real, according to the object accomplished by them; whether to distinguish merely the *meaning of a word*, or the *nature of the thing.* A real definition of any thing belongs to the science or system which is employed about that thing. It is to be observed, that in mathematics, and indeed in all the exact sciences, as well as in Logic, Jurisprudence, and Ethics, the nominal and the real definition exactly coincide; the *meaning of the word*, and the *nature of the thing*, in expression, being exactly the same.

(Art. 45.) An ACCIDENTAL DEFINITION is that which distinguishes a thing from any other by its properties or accidents.

1. Thus a ball may be defined to be a "figure that has an aptitude to roll." Or man, by his property, as a "risible ani-

mal," or an "animal endued with speech;" or by an accident, as, an "animal using fire to dress his food."

2. In defining a whole species, you cannot mention any thing which is strictly an *accident*, because if it does not belong to the *whole* of the species, it cannot define it; but in defining only some of the species, or an individual, accidents may be employed as distinctive criteria, because it is by them, that one individual or some individuals differ from others, and in this case you add the *species:* e. g. "Philip was a man of Macedon, who subdued Greece."

(Art. 46.) An ESSENTIAL DEFINITION is that which distinguishes a thing from any other, by those parts that constitute its essence; and is either *physical* or *logical.*

(Art. 47.) A PHYSICAL DEFINITION is that which distinguishes a thing from any other by the really distinct parts of its essence.

1. Thus man may be defined to be "a being consisting of an organized body and a reasonable soul," in the same way a plant may be physically defined, by enumerating the leaves, stalks, roots, &c. of which it is composed; and a proposition may be defined physically to be "a subject and predicate combined by a copula:" the parts here enumerated being actually separable.

(Art. 48.) A LOGICAL DEFINITION is that which distinguishes a thing from any other by assigning its genus and essential difference.

1. Thus man is logically defined, viz. "man is a rational animal;" for the genus is assigned by the word "animal," the essential difference by the term "rational," by which man is considered as *essentially distinct* from other animals; again, "a plant is an organized being, destitute of sensation," is a logical definition, assigning both the genus, "organized being," and essential difference, "destitute of sensation." And "a proposition is a sentence which affirms or denies," is a logical definition, assigning the genus, "sentence," and the essential difference, "which affirms or denies." And these two parts of the essence, genus and essential difference, *are distinguished only by the understanding;* whereas the parts of the essence enumerated by a physical definition, are in reality distinct, (see 47 note 1) as the "subject," "predicate," and "copula,"

may be physically and in reality separated; so the leaves, stalks, and roots of the plant enumerated as the *really* separable parts of its essence by a physical definition.

2. "Here it must be observed," says Dr. Watts, "that when we speak of the genus and essential difference, as composing a definition, it must always be understood that the *nearest genus* is required. Thus to define wine, what is the genus? "Liquid" is too remote, and "substance," still more so. Neither of these two remote genera would make any distinction between wine and a thousand other "liquids" or "substances:" a remote genus leaves the thing too much undistinguished. To prevent this, therefore, we take the nearest genus, viz. "*juice.*"

3. *Juice*, however, is only the genus; what then is the essential difference, the next point requisite to compose a complete logical definition; for of "*juices*," there are many: *cider*, for example, is a juice, so is *perry*; the former is a juice pressed from *apples*, the latter from *pears*: but the juice which is wine, is pressed from *grapes*. Wine, therefore, may be logically defined to be "a juice pressed from grapes."

4. Thus a square may be logically defined: a square is a *figure* which has "*four equal sides, and four right angles.*" By this definition the square is considered to be of one *genus*, and that genus is expressed by the word "*figure.*" But the second part of the definition expresses the essential difference, which distinguishes that figure from any other species of the same genus.

5. "Mathematicians," says Mr. Wesley, "in all their writings, follow this method; 1st, they fix the meaning of their words, defining their terms, each in its place, and make it an invariable rule, never afterwards to use any term but in the sense to which it is limited by that *definition*. 2dly, They lay down the *axioms* which there will be occasion to use in the course of their work. 3. They add their *postulata*, which they also demand to be granted, as being evident of themselves. 4. They then demonstrate their propositions in order, and as far as may be, affirmatively, contenting themselves with this rule, that whatsoever they have to prove, they take care to demonstrate from some of the truths, which have been granted or proved before. If the same method cannot be strictly observed in other sciences, yet doubtless it may be imitated. And the nearer any method approaches to this, the more perfect and useful it is." But the whole of this perfect method is built on correct definition.

6. It is scarcely conceivable how much confusion, misunderstanding and inconvenience have arisen from a neglect of accurate definitions, in writings and debates of a controversial character. Had correct definitions been strictly attended to in limine, and correct argumentation understood, tons of useless volumes and cargoes of newspaper debates, never would have misled so many thousands, nor have distracted the public attention from one age to another.

7. The whole scheme of these several kinds of definition, may be illustrated as follows: let in each the being to be defined be man.

SCHEME OF DEFINITIONS.

Nominal,			"man is a *human being*."
Real,	Accidental,		"man is a *visible animal*."
	Essential,	Physical,	"man is a *being consisting of an organized body and a reasonable soul*."
		Logical,	"man is a *rational animal*."

RULES OF DEFINITION.

(Art. 49.) The rules of definition are three.

Rule 1. Let the definition be adequate to the defined.

1. i. e. "neither too *extensive* nor too *narrow* for the thing defined:" e. g. to define "fish," "an animal that lives in the water," would be too *extensive*, because many insects, &c. live in the water; to define it "an animal that has an air bladder," would be too *narrow*, because many fish are without any. Or "an animal which breathes through gills, and is *scaly*," would likewise be too *narrow*, since all fishes have not scales. But to define wine to be "the juice of grapes" is adequate, and agrees to all proper wines, whether red, white, French, Spanish, Florence, &c.; currant wine, gooseberry wine, &c. are imitations and not proper wines, or what is from the vine; as οινος implies.

Rule 2. Let the definition be plainer than the defined.

1. That is in itself, because to some persons the term defined may be even more familiar than the definition. The advantage, however, obtained by definition is not so much *explanation*, as limitation; a matter of the utmost importance in dis-

course and controversy. This rule seems chiefly a check to a species of verbose and loose definition somewhat prevalent a century ago; as "white is a color arising from the prevalency of brightness;" a definition not only obscure but also unphilosophical.

Rule 3. Let the definition be contained in a fit number of proper, not figurative words.

1. Figurative words are altogether inapplicable to correct definition especially on account of their tendency to produce ambiguity and indistinctness. By a "fit number of words," we are to understand that *medium* which is equidistant from *obscure brevity* on the one hand, and that *redundancy* on the other, which is productive of *prolixity or tautology*. Tautology, a distinct fault from prolixity, consists in inserting too much, not in mere words, but in sense; whereas prolixity is the use of more words than is necessary to express the sense. The extremes, therefore, to be avoided are obscurity and redundancy.

2. Thus to define a parallelogram, "a four-sided figure whose opposite sides are parallel *and equal*," would be tautological, because, though it is true, that such a figure, and such alone, is a parallelogram, the equality of their sides is implied in their being *parallel*, and may be proved from it. Now the insertion of the words "and equal," leaves a reader to suppose that there may be a four-sided figure whose opposite sides are parallel but not equal. Though such a definition asserts nothing false it leads to a supposition of what is false; and consequently is to be regarded as a redundant definition.

INTERROGATORY EXAMINATION.

Q. 1. What is understood by the division of universal terms? 40.

Q. 2. How would you divide the universal term animal? 40, n. 1.

Q. 3. How many rules of division are there? 41.

Q. 4. Repeat the rules of logical division. 41, 1. 2. 3.

Q. 5. What do you understand by a definition? 42.

Q. 6. Wherein does a mere explanation or description differ from a definition? 42, 1.

Q. 7. What is a nominal definition? 43.

Q. 8. When a man is said simply to be a human being, what kind of a definition is that? 48, 7.

Q. 9. What is a real definition? 44.

Q. 10. Wherein is the distinction between a nominal and a real definition? 43, 44.

Q. 11. How many kinds of real definition are there? 44.

Q. 12. What do you mean by an accidental definition? 45.

Q. 13. By what kind of definition is man defined to be "a risible animal?" 48, 7.

Q. 14. What is the meaning of an essential definition? 46.

Q. 15. How many kinds of an essential definition can you enumerate? 46.

Q. 16. What is a physical definition? 47.

Q. 17. By what kind of a definition is man said to be "a being consisting of an organized body and a reasonable soul?" 48, 7.

Q. 18. What is a logical definition? 48.

Q. 19. How is a logical definition composed? 48.

Q. 20. When the essential difference and the genus are combined to contradistinguish a thing, what kind of definition do they constitute? 48.

Q. 21. By what kind of definition is man said to be "a rational animal?" 48, 7.

Q. 22. Which word of the phrase "rational animal," points out the genus and which the essential difference?

Q. 23. If the genus to which a triangle belongs, is expressed by the word "*figure*," and its essential difference by "*bounded by three right lines*," how will you define a triangle?

Q. 24. If the genus to which a circle belongs is expressed by "*figure*," and its essential difference by "bounded by a curved line, everywhere equidistant from the centre," what is your definition of a circle?

Q. 25. If the genus to which a solid belongs is expressed by "*figure*," and its essential difference by "having length, breadth and thickness," how do you define a solid?

Q. 26. If the genus to which painting belongs is expressed by "*art*," and its essential difference by "of delineating a resemblance on a plane surface," how do you define painting?

Q. 25. If the genus to which optics belongs is expressed by "*science*," and its essential difference by "which teaches the theory of vision and colors," how will you define optics?

Q. 28. If the genus to which mathematics belongs is expressed by "*science*," and the essential difference by "which teaches to compute numbers and quantity," how would you define mathematics?

Q. 29. Are correct definitions in writings and debates of importance? 48, 6.

Q. 30. May all definitions be comprised under the four classes, nominal, accidental, physical, and logical? 48, 7.

Q. 31. How many rules are there of definition? 49.

Q. 32. What is the first rule of definition? 49, 1.

Q. 33. What is the second rule of definition? 49, 2.

Q. 34. What is the third rule of definition? 49, 3.

PART II.

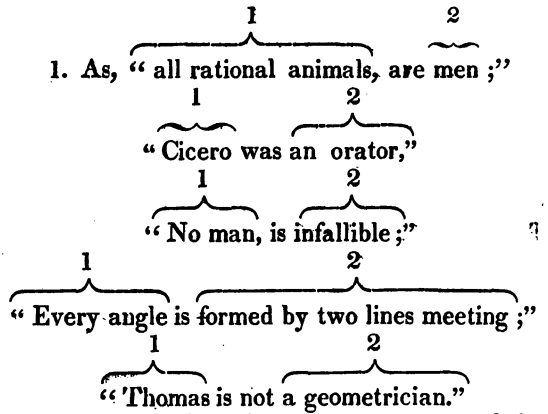
ON PROPOSITIONS.

CHAP. I.

On the nature of a proposition, and its several parts.

(Art. 50.) The second part of Logic treats of the PROPOSITION, which "is judgment expressed in words."

(Art. 51.) A PROPOSITION is a sentence containing two terms, whereof one is affirmed or denied of the other.



That a term may be either one or more words has been already stated. Art. 8 and note 1.

2. A proposition with strict logical accuracy, might have been defined, "a sentence *indicative*," consequently excluding *commands* and *questions*;* where "sentence" is taken to be the genus, and "indicative" the essential difference: or "a sentence affirming or denying," where "affirming or denying" is equivalent to the essential difference. But "containing two terms whereof one is affirmed or denied of the other" is an essential difference more consistent with the second rule of logical definition.

(Art. 52.) A proposition, as to ITS MATTER, is either true or

* Sentences containing questions or commands have nothing to do with Logic.

false: it must not be *ambiguous*, for then it would be sentences; nor *maimed*, for then it would be without signification.

1. Neither of the terms of a proposition must be *ambiguous*, for if it have two or more significations, it is capable of reduction into as many sentences: "His meat was locusts," as it stands in the present translation may mean either, "His meat was locusts," implying the winged insect so called, or "His meat was locusts," signifying the contents of the pod of the locust tree. By "maimed" is to be understood, either "*imperfect* or *ungrammatical*;" in either case the sense, of course, is destroyed.

2. To the former defect may be refered the whole of a sentence so constructed as to admit of two meanings; as, the celebrated response of the oracle, "Aio te, Æacida, Romanos vincere posse;" or Shakspeare's witch-prophecy. "The duke yet lives that Henry shall depose." Now what did this witch mean? "The duke is living that shall depose Henry," or "Henry shall depose the duke that yet lives?"

(Art. 53.) A proposition, as to ITS PARTS, consists of two terms, the *subject* and the *predicate*, connected by the *copula*.

Subj. Cop. Pred.

1. "Isaac Newton was the Inventor of Fluxions.

(Art. 54.) The SUBJECT OF A PROPOSITION is that term of which something is affirmed or denied.

1. Thus in the last mentioned proposition, "Isaac Newton" is the subject. In the proposition quoted in art. 51, note 1, "all rational animals," "Cicero," "no man," "every angle," "Thomas," are the subjects of the propositions in which they respectively occur.

(Art. 55.) THE PREDICATE is that term which is affirmed or denied of the Subject.

1. Of the propositions quoted under Art. 53, "the Inventor of Fluxions," is the predicate; and of the propositions under Art. 51, "men,"—"an Orator,"—"infallible,"—"formed by two lines meeting,"—"a Geometrician,"—are the predicates respectively.

(Art. 56.) The Subject and the Predicate are the *two terms* or *extremes* of the proposition.

1. Each term may consist of a single word, or of a collection of words, representing some person, thing or attribute; as in the following examples,

Body is divisible.

A good Government is effective of the happiness of the governed.

Sir Humphrey Davy was the discoverer of the metallic bases of the alkalies.

The spherical figure of the Eye is best adapted to its motion in all directions.

2. "It is not every word that is capable of being employed by itself as a term. Adverbs, prepositions, &c. and also nouns in any other case besides the nominative, can only form part of a term. A nominative noun may be by itself a term."

3. "A verb, all except the substantive verb used as the copula, is a *mixed* word, being resolvable into the copula and predicate, to which it is equivalent; and indeed is often so resolved in the mere rendering out of one language into another; as *ipse adest*, he is present:" sum, I am; scribebat, he wrote; equivalent to, "*I* am *existing*," "*he* was *writing*."

4. "It is to be observed, however, that under the verb, we do not include the infinitive, which is properly a noun substantive; nor the participle, which is a noun adjective. They are *verbals*, being related to their respective verbs in respect of *the things they signify;* but not *verbs*, inasmuch as they differ entirely in their *mode of signification*."

5. "An infinitive, though it often comes last in the sentence, is *never the predicate*, except when another infinitive is the subject: e. g.

subj. pred.

"I hope to succeed:" i. e. "to succeed is what I hope."

6. "An adjective or participle cannot by itself be made the subject of a proposition; but is often employed as a predicate: as, *Crassus* was rich."

(Art. 57.) THE COPULA is that *verbal connective* of the subject and predicate of a proposition, which affirms or denies the latter of the former.

1. The copula indicates the act of judgment; as by it the predicate is affirmed or denied of the subject; it *unites* the two terms of the proposition, to show their *agreement* or *disagreement;* as the *copulative or disjunctive conjunction* does the different parts of a sentence; as

Man is fallible.
=
Man is not omniscient.

2. "The copula must be either IS or IS NOT, or some tense of the substantive verb, (to be,) the only *verb* recognized by Logic: all others are resolvable, by means of this verb, and a participle or adjective: e. g. 'The Romans conquered:'—the word *conquered* is both copula and predicate, being equivalent to 'were,' (cop.) 'victorious,' (pred.) Socrates disputed, is equal to *Socrates* was *disputing; Rome is*, to *Rome* is *existing;* ambulat, to *ille* est *ambulans*, or *he* is *walking*."

(Art. 58.) The subject and predicate taken together are called the matter of the proposition.

1. That is, the subject and predicate are the materials of which the proposition is composed.

2. The subject and predicate ought always to be two different ideas, or two different terms. For if both the terms and both the ideas are the same, it is what is called an *identical proposition;* as "*a rule is a rule*," which is mere trifling. But though the terms are the same, if the ideas are different, the proposition is not strictly identical; as "*home is home*," which is equal to "*no place is like home*," or home is more eligible than any other place. "*Socrates is Socrates still;* i. e. "*the man Socrates is still a philosopher.*"—"*What is done is done;*" i. e. "it cannot be undone."

3. The subject and predicate are not always distinguished by the mere position they hold in the sentence, but by reflecting rather on the sense and design of the speaker or writer; e. g. the meaning of "*in Africa are many lions*," is, "*many lions* are *existing in Africa.*" Of the sentence, "*It is proper for a philosopher to understand Geometry*," the word "proper" is the predicate; i. e. *the knowledge of geometry to a philosopher is proper.*

INTERROGATORY EXAMINATION

ON

CHAP. I.

Q. 1. On what does the second part of Logic treat? Art. 50.

Q. 2. State what you mean by a proposition. 51.

Q. 3. How many terms does a proposition contain? 51.

Q. 4. Is a sentence that does neither affirm or deny, a proposition? 51.

Q. 5. Is a sentence that contains only a question or demand, a proposition? 51.

Q. 6. Why is this sentence, with which I now address you, not a proposition? 51.

Q. 7. What should a proposition, as to its matter, be? 52.

Q. 8. If a proposition is ambiguous, what is the consequence? 52.

Q. 9. If a proposition is maimed, that is imperfect or ungrammatical, what is the consequence? 52.

Q. 10. Of how many parts does a proposition, as to its form, consist? 53.

Q. 11. What is the subject of a proposition? 54.

Q. 12. What is the predicate of a proposition? 55.

Q. 13. What constitutes the matter of a proposition? 56.

Q. 14. What is the copula of a proposition? 57.

Q. 15. What is the only verb, which properly can be the copula of a proposition? 57,1.

Q. 16. In the proposition, Isaac Newton was the inventor of Fluxions, state which is the subject, which the predicate, and which the copula.

Q. 17. In the proposition, Sir Humphrey Davy was the discoverer of alkaline bases; distinguish the subject, the predicate, and the copula.

Q. 18. In the proposition, every angle is formed by two lines meeting; distinguish the subject, the predicate, and the copula.

Q. 19. Divide the proposition, all rational animals are men, into its three parts, subject, proposition and copula.

CHAP. II.

On the principal kinds of propositions concerned in argumentation.

(Art. 59.) Every proposition is either *absolute* or *hypothetical.*

(Art. 60.) An ABSOLUTE PROPOSITION predicates absolutely; as *man* is *fallible: man* is not *omniscient.*

(Art. 61.) A hypothetical proposition predicates conditionally; as "*If he is wise, then he is happy.*"

1. Absolute propositions are divided into PURE, which assert *simply* or *purely*, that the subject does, or does not, agree with the predicate; as, *a true Christian is an honest*

man;" and MODAL, which expresses, in what mode or manner, it agrees; as, "*it is* NECESSARY *that a true Christian should be an honest man.*" "*An intemperate man will* PROBABLY *be unwell.*" For modal and hypothetical propositions, see the next chapter.

(Art. 62.) A proposition is either AFFIRMATIVE or NEGATIVE: true or false: THIS IS THE QUALITY OF IT.

1. An affirmative proposition is one *whose copula is affirmative;* as, "all men ARE sinners;" "not to advance, is to go back."

2. A negative proposition is one *whose copula is negative;* as, "man IS NOT innocent;" "no miser is happy," since this is reducible to, "a miser IS NOT happy."

2. "Sometimes the negative particle is placed so far from the copula, that it appears to have no immediate connection with it, but rather to belong to some other part of the proposition; as,

"Not all the troops united were able to defend the fortress."

Here the negative word is placed before the subject, but still its influence falls wholly on the copula, and makes the proposition signify the opposite to what it would without it. This will be made evident by stating the proposition thus,

"All the troops united were not able to defend the fortress."

3. If the negative particle, NOT, be added to the copula of a universal affirmative, it reduces it to a particular affirmative; as, "all men are not wise," signifies the same as "*some men* are not *wise.*"

4. In English, two negatives connected in one sentence, make an affirmative; as, "no man is not mortal," which is identical in meaning with "man is mortal." But in Greek, and often in French, two negatives render the negation intensive.

(Art. 63.) A proposition also is either UNIVERSAL or PARTICULAR: THIS IS THE QUANTITY OF IT.

(Art. 64.) If the predicate is said of the WHOLE OF THE SUBJECT, the proposition is UNIVERSAL.

1. As, "*all free agents are accountable;*" "*every sin is a violation of the divine law;*" "*no miser is rich;*" "*no wicked man is a happy man.*" Here the predicate is said of the whole of the several subjects respectively; they are, therefore, universals.

(Art. 65.) If the predicate is said of a PART ONLY OF THE SUBJECT, the proposition is PARTICULAR.

1. As, "*some islands are fertile;*—"*some difficult things are virtues*"—"*some who prefer faith are not true believers*"—"*several animals are amphibious,*" are particular propositions, since the predicate is said of a part of the subject only.

2. Thus it appears (Art. 62 and art. 63) that there are four kinds of absolute propositions; viz. a *universal affirmative, a universal negative, a particular affirmative, and a particular negative.*

(Art. 66.) A UNIVERSAL AFFIRMATIVE is a proposition, whose subject is a *universal* term, *of the whole of which the predicate is affirmed:* its usual signs are, *all, each, every, whatever, &c.*

1. As, *all animals have the power of motion;—each of the class was instructed;—every creature had a beginning;—whatever is produced by regular laws, is a proof of an intelligent agent.*

(Art. 67.) A UNIVERSAL NEGATIVE is a proposition, whose subject is a *universal* term, *of the whole of which the predicate is denied:* its usual signs are, *no, none, neither, &c.*

1. As, *no sins are excusable;*—none of the *ancient philosophers understood fluxions;*—neither of *the Bernoullis proved the case against Newton.*

(Art. 68.) A particular affirmative is a proposition, whose subject is a universal term, of a part of which only the predicate is affirmed: its usual signs are, *some, many, most, few, several, there are, which, &c.*

1. As, *some stones are heavier than iron;—many parrots can talk;—most minerals are heavy;—few men are truly wise;—several kinds of animals are amphibious;—there are metals which are lighter than water.*

(Art. 69.) A PARTICULAR NEGATIVE is a proposition whose subject is a universal term, of a part of which only the predicate is denied: its usual signs are *those of a particular affirmative* with the particle *not* annexed to the copula.

1. As, SOME *difficult things* are NOT *evils*;—MANY *parrots* CANNOT *talk*;—MOST *of the Turks* are NOT *learned*;—FEW *of the graduates were* NOT *instructed in geometry*;—SEVERAL *troops were* NOT *armed*;—THERE ARE *conjunctions* WHICH *are* NOT *signs of the subjunctive.*

2. To express these principal and most useful distinctions of propositions in argumentation, logicians employ the symbols A. E. I. and O. That is, *A. represents a universal affirmative; E. a universal negative; I. a particular affirmative; and O. a particular negative.*

3. It will be found of considerable importance to remember this, particularly with reference to the distribution of the middle term, and the mood and figure of any syllogism: for the convenience of the memory, therefore, it will be expressed in the following memorial lines.

(Art. 70.) *Universally*, A AFFIRMS, AND E DENIES;
Particularly, I AFFIRMS, AND O DENIES.

(Art. 71.) Some universal or particular propositions are *singular*, some *indefinite.*

(Art. 72.) A SINGULAR PROPOSITION is one whose subject is a singular term.

1. As, *Descartes was an ingenious philosopher;—the palace at Hampton Court is a pleasant dwelling;—this day is very warm;—Sir Isaac Newton was the author of the Principia.*

2. A demonstrative pronoun in the singular number, as *this* or *that*, prefixed to the subject of the proposition, renders it singular; as "THAT *General was defeated.*"

3. Singular propositions are reckoned as universal, because in them we speak of the *whole of the subject*; e. g. when we say, "*Brutus was a Roman*," we mean the *whole* of Brutus: this is the general rule: but some singular propositions may be fairly reckoned particular; i. e. when some qualifying word is inserted, which indicates that you are not speaking of the whole of the subject; as, *Cæsar was not wholly a tyrant;* THIS MAN IS OCCASIONALLY INTEMPERATE;—"Non omnis Moriar" Horace, i.e. *I shall not altogether die.*

(Art. 73.) An INDEFINITE PROPOSITION is one that has no sign expressed to indicate whether its subject is to be taken in a *universal* or *particular* sense.

1. As, *beasts have four feet;* i. e. ALL beasts. *A planet is ever changing its place;* i. e. ALL planets. These then are universal. *The Chinese are ingenious silk weavers;* i. e. SOME Chinese. *The stars appear to us when the twilight is gone;* i. e. those stars only which are above the horizon. These, therefore, are particulars.

2. When there is no sign, as in the case if an indefinite, the quantity of the proposition is ascertained by the matter of it; i. e. the nature of the connexion between the extreme terms, which is either NECESSARY, IMPOSSIBLE or CONTINGENT.

3. The *matter of a proposition* is said to be NECESSARY, when its two terms essentially agree; as, *birds have wings,* i. e. ALL.

4. The *matter* of a proposition is said to be IMPOSSIBLE, when its two terms essentially disagree; as *birds are not quadrupeds;* i. e. NONE.

5. The *matter* of a proposition is said to be CONTINGENT, when its two terms agree or disagree accidentally; as, *birds sing;* i. e. SOME do.

6. In *necessary and impossible* matter an indefinite proposition is understood as a UNIVERSAL; in *contingent* matter, as a PARTICULAR; as, *animals have sensation;* i. e. ALL: *quadrupeds have not wings;* i. e. NONE: *birds are not carnivorous;* i. e. SOME are not.

7. Indefinite propositions, as well as singular propositions, are not in quantity distinct from universals or particulars. They differ only in *form,* but are reducible to one or the other, according to their matter or sense.

Additional remarks on Universal and Particular Propositions,

Chiefly extracted from Dr. Watts.

1. "UNIVERSAL TERMS may denote either a *metaphysical,* a *physical,* or a *moral universality.*

2. A METAPHYSICAL OR MATHEMATICAL UNIVERSALITY is when all the particulars contained under any general term, have the same predicate belonging to them, without any exception whatever; or when the predicate is so essential to the uni-

versal subject, that it destroys its very nature to be without it; as, "*all circles have a centre and circumference;*" "*all spirits in their own nature are immortal.*"

3. A PHYSICAL OR NATURAL UNIVERSALITY is when, according to the order and the common course of nature, a predicate agrees to all the subjects of that kind, though there may be some exceptions accidental or preternatural; as, "*all men use words to express their thoughts,*" yet dumb persons are excepted; "*all beasts have four feet,*" yet there may be some monsters with five; or maimed, who have but three.

4. A MORAL UNIVERSALITY is when the predicate so agrees to the greatest part of the particulars which are contained under the universal subject, as to constitute its general character; as, "*all men are governed by affection rather than by reason;*" "*all the Romans loved their own country.*" Now it is evident, that a special or singular conclusion cannot always be drawn from a moral universality, nor always and infallibly from a physical one; though it may be always inferred from a universality which is metaphysical, without any danger or possibility of mistake.

5. In common language, little or no distinction is made between a subject that is physically or metaphysically universal.

6. A universal term is sometimes taken *collectively* for all its particular ideas united together into one whole; and sometimes *distributively*, meaning each of them singly and alone; for example, collectively, "*all these apples will fill a bushel;*" not each apple nor every apple singly, but all collectively. But a distributive universal will allow the word all to be changed into every, or into one; for "*all men are mortal,*" means "*every man is mortal.*"

7. The universality of a subject is often restricted by the peculiar import of the predicate; as, "*all men learn wisdom by experience,*" i. e. all those men who do learn wisdom; for it is what, alas! many never learn. This phraseology is also used in Scripture; as, "*all men being justified by the righteousness of one,*" Rom. v. 18: that is, *all men who are justified obtain it this way.* So when we say, "*all the Dutch are good seamen: all the Italians are subtle politicians:*" i. e. *those among the Dutch that are seamen, are good seamen: those among the Italians, who are politicians, are subtle politicians, i. e. they are generally so.*

8. The universality of a term is frequently restricted by some circumstance, as of time, place, &c., expressed or implied in the context; so that those who dwell in London may say, "*all*

the weavers went to present their petition," i. e. all who dwell in the city: surely not those who reside at Macclesfield. So when it is said in the Gospel, *"all men did marvel,"* Mark v. 20, it extends to those only who saw or heard of the miracles there spoken of.

INTERROGATORY EXAMINATION

ON

CHAP. II.

Q. 1. Into what two principal divisions are propositions divided? 59.

Q. 2. How do you distinguish between absolute and hypothetical propositions? 60, 61.

Q. 3. Of the two propositions; the Scythians were herdsmen; and if they are warlike, then are they cruel; which is an absolute, and which a hypothetical proposition? 60, 61.

Q. 4. What is the division of propositions as to quality? 62.

Q. 5. What is meant by the quality of a proposition? 62.

Q. 6. What do you mean by an affirmative proposition? 62. 1.

Q. 7. What do you mean by a negative proposition? 62. 2.

Q. 8. Of the two propositions, the earth is a planet—the sun is not a planet; which is affirmative, and which is negative?

Q. 9. What is meant by the quantity of a proposition? 63.

Q. 10. What is the division of propositions as to quantity? 63.

Q. 11. What is a universal proposition? 64.

Q. 12. What is a particular proposition? 65.

Q. 13. Of the two propositions,—all plants are vegetables;—and, some birds are aquatic; which is a universal, and which a particular proposition?

Q. 14. Define a universal affirmative. 66.

Q. 15. What is your definition of a universal negative? 67.

Q. 16. Of the two propositions,—every animal is a creature of sensation,—no vegetable has the power of motion; which is a universal affirmative, and which a universal negative?

Q. 17. What do you mean by a particular affirmative? 68.

Q. 18. Define a particular negative. 69.

Q. 19. Of the two propositions,—some trees are evergreens,—many trees do not bear flowers; which is a particular affirmative, and which a particular negative?

Q. 20. What symbols do logicians employ to signify these four principal

kinds of propositions, viz. universal affirmatives, universal negatives, particular affirmatives, and particular negatives?

Q. 21. Can you repeat the useful memorial lines relative to these symbols? 70.

Q. 22. What does A signify? 70.

Q. 23. What does E indicate? 70.

Q. 24. What does I denote? 70.

Q. 25. What is intimated by O? 70.

Q. 26. Write down the four following propositions, and prefix their proper letters:

All vegetables grow.
All men are not learned.
Some men are philosophers.
Some metals are not heavy.

Q. 27. What kind of a proposition is, all men are sinners?

Q. 28. What kind of a proposition is, all men are not happy?

Q. 29. What kind of a proposition is, some men are learned?

Q. 30. What kind of a proposition is, few stones are not lighter than iron?

Q. 31. What is a singular proposition? 72.

Q. 32. What kind of a proposition is, Demosthenes was a Grecian orator?

Q. 33. Do you understand the last proposition to be universal or particular?

Q. 34. Why do you understand that the proposition, Demosthenes was a Grecian orator, is universal? 72. 3.

Q. 35. What is an indefinite proposition? 73.

Q. 36. What kind of a proposition is, birds are covered with feathers?

Q. 37. Why do you understand this indefinite proposition to be equivalent to a universal? 73. 2.

Q. 38. When the matter of an indefinite proposition is necessary or impossible, is that indefinite proposition universal or particular? 73. 6.

Q. 39. When the matter of an indefinite proposition is contingent, is that indefinite proposition to be understood as universal or particular? 73. 6.

Q. 40. What are the usual signs of a universal affirmative? 66.

Q. 41. What are the usual signs of a universal negative? 67.

Q. 42. What are the usual signs of a particular affirmative? 68.

Q. 43. What are the usual signs of a particular negative? 69.

CHAP. III.

The Secondary Division of Propositions.

The only kinds of propositions that in Logic or Argumentation, chiefly, require attention, are the *universal affirmative*, the *universal negative*, the *particular affirmative*, and the *particular negative;* under one or the other of which, we are always able, as before observed, to class the singular, and the indefinite proposition. We shall, however, in the course of practice, meet with modal, compound, complex and conditional propositions, which, when necessary, are easily reducible to the four principal classes already given.

(Art. 74.) A PURE OR SIMPLE PROPOSITION is one wherein the predicate is *simply* affirmed or denied of the subject.

1. As, *Thomas killed John. Every eye is a natural telescope.*

(Art. 75.) A MODAL PROPOSITION is one wherein the predicate is affirmed or denied, *in a certain way, mode or manner*, of the subject.

1. As, *Thomas* ACCIDENTALLY *killed John; Thomas* WILFULLY *killed John:* or *Thomas* MALICIOUSLY *killed John.*

2. *Modality*, or the manner in which the predicate is connected with the subject, may express, *necessity or contingency, possibility or impossibility, certainty or uncertainty, probability or improbability, lawfulness or unlawfulness, conveniency or inconveniency, &c.*, as *it is necessary that a globe should be round; that a globe be made of wood is an unnecessary or contingent thing: it is possible that a globe should be made of glass: it is impossible that a globe should be square.*

3. "A *modal* proposition may be stated as a *pure* one *by attaching the mode to one of the terms:* and the proposition will, in all respects, fall under the rules of pure propositions given in Chap. II, as 'Thomas killed John *wilfully and maliciously*:' here the mode is to be regarded as part of the predicate. 'It is *probable* that all knowledge is useful;' is in sense the same as *all knowledge* is *probably useful*, where *probably useful* is the predicate. 'Man is *necessari-*

ly mortal,' is the same as, '*all* men are mortal.' 'Injustice is *in no case* expedient;' corresponds to '*no* injustice is expedient.' "

sub. cop. pred. subject.

4. It is impossible that all men should be learned is the same

Subject. cop. predicate.

as that all men should be learned is an impossibility. The

sub. cop.

interesting declaration of the Apostle Paul, "This is

predicate. subject.

a faithful saying, &c. that Jesus Christ came into the world

subject.

to save sinners, will correspond to that Jesus Christ came in-

cop. predicate.

to the world to save sinners, is a faithful saying, &c.

5. "The English word IN is often used in expressing one proposition combined with another, in such a manner as to make one proposition equal to two in sense; as 'you will have a formidable opponent to encounter *in* the Emperor: this involves two propositions; viz. 1st. 'You will have to encounter the Emperor;' 2dly. 'He will prove a formidable opponent."

6. It will often happen that two or more propositions expressed in a single sentence, may require to be distinctly stated and proved separately: e. g.

"Thomas killed John wilfully and maliciously."

The advocate may have to prove first the *fact* that

"Thomas killed John."

And then the *character of that act*, that

"*The killing* was *wilful and malicious.*"

(Art. 76.) A COMPLEX PROPOSITION is one which has one or both of its terms complex.

1. As *every sincere penitent* is *pardoned: no man alive* is *perfectly innocent. Every pious man* will be *happy.*

2. "They are formed in different ways. A proposition is

sometimes rendered complex, by having for its subject or predicate some other proposition or words equivalent; as

"*That one man should be punished for the crimes of another* is unjust.

"The words which precede *is*, and which form the subject of this example, obviously contain an entire proposition."

3. "Frequently the subject of a proposition is first represented by the pronoun *it*, and afterwards distinctly expressed; as in the following expression: 'It is impossible to guess at the limit, to which our forbearance would have extended.'"

The words constituting the real subject are here represented by the word *it*, which being omitted, and the subject stated first, the proposition will stand thus:

"*To guess at the limit to which our forbearance would have extended*, is *impossible.*"

4. The subject or predicate is sometimes made complex, by limiting it with a relative clause; or by any other qualification or restriction; as,

Napier, who was Baron of Merchiston in Scotland, WAS *the inventor of logarithms.*

Pious men are respected.

The mind is an *indivisible* substance.

The words introduced by the relative, in the first example, form a complete proposition, called the *incident*, viz: *who* was *Baron of Merchiston*, and is equivalent to *Napier* was *Baron of Merchiston:* and the whole proposition in reference to its relative or incidental part, is called *primary* or *principal.* As the design of the *incident* or relative proposition, is merely to explain, limit or restrict the subject or predicate, as the case may be, of the *primary*, it can be considered only as a part of the term in which it is placed.

The subject of the second example, and the predicate of the third, are also restricted; but by other means, viz: by the adjective *pious* in the first, and *indivisible* in the second proposition. Still, "*Napier, who was Baron of Merchiston in Scotland;*"—"*pious men*"—"*indivisible substance,*" are each respectively only one term.

(Art. 77.) A COMPOUND PROPOSITION is one, that has two or more subjects or predicates, or both; and may, therefore, be resolved into two or more distinct propositions.

1. As,

Spring, summer, autumn and winter, are seasons of the year.

This is divisible into

Spring is a season of the year.

Summer is a season of the year, &c. κ. τ. λ.

Alfred was prudent, valiant, just and benevolent.

Which we may thus divide:

Alfred was prudent.

Alfred was valiant, &c. κ. τ. λ.

2. "Every compound proposition may be reduced to as many single ones as it contains subjects, to which the whole predicate will apply, and predicates to which the whole subject will apply; or as there are parts in each, which are separately applicable to each other; as,

'Beasts, birds, and insects, have life, sense, and motion.'

This example contains three subjects and three predicates, and may be reduced to nine distinct propositions."

3. If, however, two or more words are so connected as collectively to constitute only one subject or one predicate, this forms a complex, not a compound proposition; as,

"Joy and sorrow are opposite passions."

"Ye cannot serve God and Mammon."

Neither of these is capable of division, the two parts which constitute one subject in the former example, and the predicates in the latter must be taken conjointly.

4. In this point the distinction exists between a compound and a complex proposition. In the former, the parts which constitute the subject or predicate, are independent, and may be taken separately or conjointly; which cannot be done in complex propositions. In either the subject or predicate of complex propositions, certain words are either joined together necessarily constituting one integral subject or predicate, which is, consistently with its sense, indivisible; or one part of the proposition is limited, by a relative or explanatory word. In either of which cases, the words which render the proposition complex, must be regarded as essential parts of the term in which they occur.

5. Wherever a complex proposition is composed of a *primary* and an *incidental* one, (see art. 76, note 4.) the incidental proposition may be false, while the *primary*, always having reference to its relative or incidental part, is true; as,

A horse, which has wings, might fly over the Mississippi.

On the contrary in compound propositions, there exists no distinction of primary and incidental; each part being independent of the rest. The compound proposition, therefore, must be false, when any of the propositions into which it may be resolved, is false, though the others be true.

6. Compound propositions may be distributed into *copulative*, *discretive*, and *disjunctive* distinctions, dependent on the particle employed in the connection of their parts.

(Art. 78.) A COPULATIVE PROPOSITION is that compound proposition, which has its subjects or predicates connected by affirmative or negative *conjunctions*.

1. As, riches *and* honors are temptations to pride:—Cæsar conquered the Gauls *and* Britons:—neither gold *nor* jewels will purchase immortality.

2. The propositions are evidently compounded; for each of them may be resolved into two propositions; as,

"Riches are temptations to pride," and "honor is a temptation to pride." The truth of copulative propositions depends upon that of all the parts of them; for if Cæsar had conquered the Gauls, and not the Britons, or the Britons and not the Gauls, the second proposition had not been true.

(Art. 79.) A DISCRETIVE PROPOSITION is that compound proposition which expresses more judgments than one, connected by the particles, but, though, yet, notwithstanding, &c.

1. As, "Travellers may change their climate, *but* not their temper:" "Job was patient, *though* his grief was great"—"though he was afflicted, *yet* he did not murmur."

2. The coherency of a discretive proposition depends on the connection of both parts and their relevancy to one another. It can be denied only by a negative affecting the conjunctive particle; e. g. "Though he was afflicted, yet he did not murmur," can only be denied, by affirming either he was not afflicted, and therefore his not murmuring implies nothing; or he was afflicted and he did murmur; or he was not afflicted, yet he murmured.

(Art. 80.) A DISJUNCTIVE PROPOSITION is that compound proposition which asserts that a subject agrees with one of two or more predicates, or a predicate with one of two or more subjects.

1. As, "it is either day or night:" either the sun or the

moon will be eclipsed on midsummer day."—"The weather will, at that time, be either clear or cloudy."

2. The truth of disjunctives depends on the necessary opposition of the parts. Wherefore the first of these examples is not strictly true, since it may be denied by contradicting the necessity of the alternative; thus,

It is neither day nor night, for it is twilight.

(Art. 81.) A CONDITIONAL PROPOSITION is one whose parts are united by the conditional particle, if.

1. As, "if the sun were fixed, the earth must move"—"if there be no fire, there will be no heat."

2. The first of these propositions, or that wherein the condition is contained, is called the ANTECEDENT; the other is called the CONSEQUENT; the connection between them the CONSEQUENCE.

3. The rules of conditional propositions are three.

1. If the antecedent be granted, so is the consequent.
2. If the consequent be taken away, so is the antecedent.
3. Nothing can be inferred either from taking away the antecedent, or granting the consequent.

4. The directions given for *conditional* propositions, serve equally for *disjunctive*. For any disjunctive is easily turned into a conditional: for example:

It is either day or night.
But it is day: therefore it is not night.
But it is night: therefore it is not day.
It is not day: therefore it is night.
It is not night: therefore it is day.

Instead of this, it is easy to say—

If it is day, then it is not night.
If it is night, then it is not day.
If it is not day, then it is night.
If it is not night, then it is day.

5. The truth of conditional propositions, however, depends not exclusively on the truth or falsehood of their two parts, but on the truth of the connection; for each part may be false, and yet the whole proposition, as it stands with false parts, true; as, "*If there be no Providence, there will be no future judgment.*"

(Art. 82.) A CAUSAL PROPOSITION is one whose parts are connected by causal particles.

1. As, "Houses were not built, *that* they might be de-

stroyed." "Rehoboam was unhappy *because* he followed evil counsel."

2. "The truth of the causal proposition arises not from the truth of the distinct parts, but from the causal influence that the one part has on the other: for both parts may be true, yet the proposition may be false, if one part be not the cause of the other."

(Art. 83.) A RELATIVE PROPOSITION has its parts connected by particles expressing a relation or comparison.

1. e. g. "*As* much as you are worth, *so* much shall you be esteemed:" "*As* is the Father, *so* is the Son:" "Where there is no mistake of the truth, heresy will cease." Duncan and Hedge object to conditional, causal, and relative propositions being considered as different kinds of compound propositions. The latter observes what are usually termed *conditional, causal, and relative* propositions, are nothing more than different modes of connecting two entire propositions together. It is essential to the individuality of a proposition that it have but one copula. However compounded or complicated the subject or predicate may be, they must be connected by a single affirmation or negation. This rule is violated in every instance of what are called conditional, causal, and relative propositions.

3. The reciprocal and identical proposition will be properly noticed here. A RECIPROCAL PROPOSITION is one which will admit of inversion; or of its subject being changed for its predicate, or vice versa, without any change in its sense; as, *all birds are feathered animals*, which is the same as *all feathered animals are birds*. Thus the proposition, *three times three are nine*, is the same as *nine are three times three:* these therefore are reciprocal propositions. But though we may say, *all birds are animals*, yet we cannot consistently with truth say *all animals are birds:* this proposition therefore is not reciprocal.

4. An IDENTICAL PROPOSITION is one whose subject and predicate are composed of the same words expressive of the same ideas. Thus the philosopher when interrogated relative to the connection between magnetism and electricity, could only reply by saying that all he knew about it was that "*magnetism was magnetism.*" But if, notwithstanding the identity of the terms, the ideas are different, the proposition is not identical; as the "*hero was not a hero,*" signifying

that he, who by report was a hero, did not, by his courage, maintain this character.

3. Any further division of propositions is unnecessary; Mr. Andrew's enumeration of self-evident, demonstrable, speculative and practical propositions, is what logicians call a *cross division.* See Andrew's Logic, page 68 and seq.

INTERROGATORY EXAMINATION

ON

CHAP. III.

We have already observed that the *universal affirmative*, the *universal negative*, the *particular affirmative*, and the *particular negative*, or the propositions defined and explained in Chap. II, are of principal importance, and to which all the rest are reducible. These, therefore, should claim the first and chief attention of the student; and their definitions and rules, given in the same chapter, should by him be committed to *memory*, and repeated at his examination. The propositions which constitute the subject of the present chapter, though reducible to the former, could not, on this account, with any propriety, be omitted. They are, therefore, according to the usual custom of logical treatises, inserted here for *careful perusal and occasional reference.*

Q. 1. What is a *pure* or simple proposition? 74.

Q. 2. Describe a *modal* proposition. 75.

Q. 3. May a modal proposition be reduced to a pure or simple proposition, and how? 75, 3.

Q. 4. What is a complex proposition? 76.

Q. 5. Describe a compound proposition. 77.

Q. 6. Define a copulative proposition. 78.

Q. 7. What is a discretive proposition? 79.

Q. 8. State the nature of a disjunctive proposition. 80.

Q. 9. Describe a conditional proposition? 81.

Q. 10. What is a causal proposition? 82.

Q. 11. What is a relative proposition? 83.

CHAP. IV.

On the distribution of the terms of a proposition.

1. The necessity of distributing the terms of a proposition of one of the premises employed in argumentation, depends on what is called Aristotle's dictum; which is that "*whatever may be predicated, (i. e. affirmed or denied) universally of any class of things, may be predicated, in like manner, (viz. affirmed or denied,) of any thing comprehended in that class.*" This is the principle, commonly called the dictum de omni et nullo, for the establishment of which we are indebted to Aristotle, and *which is the key of his whole logical system.* A principle not of any particular kind, but universally of all correct reasoning whatever.

2. If by predication, we understand, either affirmation or negation, Aristotle's dictum may be more concisely expressed thus; "*Whatever may be predicated universally of any class of things, may be predicated of any thing comprehended in that class.*"

(Art. 84.) A term is said to be DISTRIBUTED, when it is taken universally, so as to stand for every thing to which it is capable of being applied; and undistributed, when that term stands for a portion only of the things signified by it.

1. It has been inquired, "if by 'distribution,' we are to understand the division of a term not only into the whole of its *extension*, but also into the whole of its *comprehension?*"

2. We have already remarked, that *the* EXTENSION *of a term regards the division of a genus into its several species: of a species into its several classes: of a class into its several individuals.* Thus the extension of the genus ANIMAL is into its species, *men, beasts, birds, fishes,* and *insects:* of the genus, QUADRUPED, into *elephants, camels, lions, tigers, horses, &c.:* of the genus BIRD, into *eagle, ostrich, swan, crane, lark, &c.:* of the genus, WEB-FOOTED, into *pelican, cormorant, swan, duck, teal, &c.*

3. And that by *the* COMPREHENSION *of a term is meant the aggregate of all its known properties:* thus the genus ANIMAL includes in its comprehension, the common properties

of *life, sense,* and *motion:* the genus QUADRUPED, the properties common to the higher genus animal, and in addition, the ESSENTIAL DIFFERENCE, *having four feet:* the genus BIRD, the properties common to animals, and the ESSENTIAL DIFFERENCE, having *wings* and *feathers,* and being *oviparous:* the genus web-footed, the properties common to birds, and the ESSENTIAL DIFFERENCE, being *web-footed.*

4. This will be best explained by the four following examples:

Comprehension.	Extension.		Comprehension.	Extension.
Life, Sense, Motion, *Wings, Feathers, Oviparous.*	Ostrich, Eagle, Swan, Crane, Lark, &c.	*Example 1st.* All birds are animals.	Life, Sense, Motion.	Men, Beasts, Birds, Fishes, Insects.
Life, Sense, Motion, *Wings, Feathers, Oviparous.*	Ostrich Eagle, Swan, Crane, Lark, &c.	*Example 2d.* No bird is a quadruped.	Life, Sense, Motion, *having four feet.*	Elephants, Camels, Lions, Tigers, Horses, &c.
Life, Sense, Motion, Wings, Feathers, Oviparous.	Ostrich, Eagle, Swan, Crane, Lark, *Pelican* &c.	*Example 3d.* Some birds are web-footed. *Example 4th.* Some birds are not web-footed.	Life, Sense, Motion, Wings, Feathers, Oviparous, *web-footed.*	Pelican, Cormorant, Swan, Goose, Duck, Teal, &c.

5. The several particulars, in the *left* hand columns, whether of comprehension or extension, refer to the *subject* of the proposition against which they stand, and those in the *right* hand columns to the *predicates* respectively of the same. The subject of Example 1st belongs to a universal, therefore it is *distributed:* the proposition of Example 2d is a universal negative, therefore both its subject and predicate are distributed. Neither subject nor predicate of Example 3d is distributed, because it is a particular affirmative. Only the predicate of Example 4th is distributed, because it is a particular negative. All the distributed terms are properly marked in the above examples.

6. As to those terms not distributed, no question, in the present case, applies; but the inquiry is, how are the subjects of the 1st and 2d Examples, and the predicates of the 2d and 4th Examples distributed, in extension, in comprehension, or

in both? No term in Example 3d being distributed, no question applies to it.

7. A slight inspection of the four examples, will afford *ocular* illustration that the following is the answer to the general question, (note 1.) When a term, whether in an affirmative or negative proposition is *distributed*, that distribution is not only of the whole of its extension, but also of its comprehension; for if the whole of its extension be admitted or excluded, so must likewise all implied by its comprehension. For the extension and comprehension of a genus, species, class, or individual, are essentially inseparable.

8. Thus, on the inspection of Example 1st, we find that, corresponding to the rule, "*A distributes the subject, O the predicate, I neither, and E both,*" its subject is marked as distributed, and, accordingly, all things in the columns of comprehension and extension, on the left of the subject, are involved in the universal term, "*birds;*" and that birds, in the whole of this meaning, are affirmed to be *animals*, i. e. creatures generally having life, sense and motion.

9. But to render this important point still more clear, we shall repeat the examples, with further explanation,

"All birds are animals."

On refering to the columns on the left hand, we find, in that of comprehension, that birds are creatures having the properties of *life, sense, motion*, having WINGS and FEATHERS, and being OVIPAROUS; and that the universal term, "bird," includes all its species, whether these be *ostrich, eagle, swan, crane, lark, parrot, linnet*, &c., or any or all others whatever, in their comprehension, distinguished as birds. Now the universal term, or "birds," *including the whole of these, whether of comprehension or extension*, are affirmed to be animals, creatures having *life, sense* and *motion.*

10. In Example 2d, viz.

"No bird is a quadruped,"

we find, according to the rule quoted above, that both the subject and predicate are distributed: we are, therefore, at liberty to take all in the columns of comprehension and extension belonging to the predicate and subject, or in the right and left hand columns; and that as the proposition is negative, all things whatever implied in the predicate, QUADRUPED, as beings having *life, sense, motion*, and FOUR FEET, whether *elephant, camel, lion, tiger, horse*, or any other *such* creature, are denied of the subject "BIRDS," a being of *life, sense, motion,*

having WINGS, FEATHERS, and also OVIPAROUS, whether *ostrich, eagle, swan, crane, lark,* &c.

11. Example 3d being a particular affirmative, has, according to the above rule, neither term distributed; to which example, therefore, the present question does not apply.

12. Example 4th being a particular negative, has, according to the rule, the predicate only distributed, and consequently marked thus,

Some birds are not web-footed.

The predicate, therefore, being distributed, and the proposition negative, all things whatever, of comprehension or extension, implied in the predicate "WEB-FOOTED," a being of *life, sense, motion, having wings, feathers, oviparous,* and also, according to its essential difference, WEB-FOOTED, whether *pelican, cormorant, swan, duck, teal,* &c., are denied of the subject, "some birds," which being particular, is not distributed.

13. Again, it is evident, that *no subject, but the subject of a universal proposition, is distributed:* we again appeal to the rule, which cannot be too well impressed on the memory, and in confirmation shall thus distinguish it,

"A distributes the subject, O the predicate, I neither, and E both."

A and E are both universals; O and I not. The subject, therefore, of a universal, is understood of the whole of it, whether of comprehension or extension.

14. And, *no predicate but the predicate of a negative is distributed;* the rule, differently marked, declares the same; as,

"A distributes the subject, O the predicate, I neither, and E both."

The whole of which predicate, therefore, whether of comprehension or extension, is denied of its subject.

14. Consequently *the predicate of no affirmative proposition is distributed.* It may, however, be observed that "*in all affirmative propositions, the predicate has no greater extension than its subject*; for its extension is restrained by its subject; and thereforeit is always to be esteemed as a particular idea: thus in Example 1st.

	Extension.
All birds are animals.	Men. Beasts. Birds. Fishes. Insects.

The extension of the predicate is only to that species of ani-

mals, denominated by the subject, "Birds:" the proposition, therefore is not reciprocal, (art. 32, n. 3) for we cannot say, *all animals are birds.* It is by mere accident, not by the general rule, if ever, in an affirmative, the predicate be taken universally; and cannot happen, but in such universals as are reciprocal; as all equiangular triangles are equilateral; as all equilateral triangles are equiangular.

15. "It is evident," says Dr. Whately, "that *the subject is distributed in every universal proposition; but never in a particular;* that being the very difference between universal and particular propositions. But the distribution or non-distribution of the predicate, depends, not on the *quantity*, but the *quality* of the proposition: for if any part of the predicate agrees with the subject, it must be affirmed and not denied of that subject. Therefore, for an affirmative proposition to be true, it is sufficient that some part of the predicate agrees with the subject. And for the same reason for a negative to be true, it is necessary that the whole of the predicate should *disagree* with the subject: e. g. it is true that '*learning is useful,*' though the whole of the predicate, useful, does not agree with the subject 'learning;' for many things are useful besides learning: but, 'no vice is useful,' would be false, if any part of the predicate, 'useful,' agreed with the subject 'vice;' i. e. if we could find any one useful thing which is a vice; or to say, that 'no beasts of prey ruminate' implies that beasts of prey are excluded from the whole class of ruminant animals; and consequently that 'no ruminant animals are beasts of prey;' hence the *distribution of the predicate is implied in negative propositions, and its non-distribution in affirmatives.*" After this explanation we present the general rule.

(Art. 84.) All universal propositions distribute the subject; all negatives the predicate.

1. It may happen, as we have already observed, that the whole of the predicate in an affirmative may agree with the subject; but this is merely *accidental*, as in the case of reciprocal or identical propositions. When, however, a singular term is the predicate, it must of course, be co-extensive with the subject; as "*Romulus was the fonnder of Rome:*" which also is reciprocal, since it is equally true that, "*the founder of Rome was Romulus.*" From the above rule it is evident, that *the predicate of a negative is distributed, and of an affirmative undistributed.*

2. Therefore, in a *universal affirmative* the SUBJECT only

is distributed; in a *particular negative* only the PREDICATE; in a *particular affirmative*, NEITHER TERM is distributed; in a *universal negative*, BOTH.

3. It is therefore sometimes said that the *signs* of a proposition determine whether its subject or predicate is distributed or not: thus, ALL, EACH, EVERY, WHATEVER, (the signs of a universal affirmative) mark the distribution of the SUBJECT; the signs, *no, none, neither*, (or signs of a universal negative,) mark the distribution of both SUBJECT and PREDICATE; the signs, *some, many, most, few, several*, (the signs of a particular affirmative,) mark that NEITHER is distributed; except when accompanied by the particle *not* (or a particular negative,) which then marks the distribution of the predicate.

4. Only it is to be remembered, that the words, *all, each, every*, &c. which mark the distribution of the subject; and *some, many, most, few*, &c. which mark its non-distribution, are not always expressed; they are frequently understood, and left to be supplied by the context, or meaning of the proposition; thus "men are mortal," i. e. *all* men, *every* man, &c. "Food is necessary to life," i. e. *some* food. Propositions thus expressed, are, as before observed, indefinite or singular, and are resolvable by the rules already given for universals or particulars, according to their evident scope and signification.

5. The whole of this doctrine relative to distribution, so necessary when we come to argumentation, or to the distribution of the middle term of every syllogism, might to some appear, if not a little intricate, yet requiring, on every occasion, considerable attention and memory to determine whether a term be distributed or not. It is, however, fortunate, that the whole of it, involving all the mystery, which, if any, it contains, may for every practical purpose be expressed in a rule of one line. But before we give this rule, it will be proper to inquire if the learner remembers another previously given, viz: "A, represents a universal affirmative; E, a universal negative; I, a particular affirmative, and O, a particular negative? which, for the convenience of the memory, was thus expressed:

Universally A affirms, and E. denies.
Particularly I affirms, and O denies.

This being remembered, we may express the *practical* rule of the whole doctrine of distribution in one short sentence, viz:

(Art. 85.) A distributes the subject; O the predicate; I neither, and E both.

1. These two rules well remembered and understood will enable the learner to overcome more than half of any difficulty implied in learning Logic. To enable him to apply and exercise these rules, we now present him with the following examples.

Ex. 5. All free agents are accountable.

Ex. 6. Many buildings were destroyed.

Ex. 7. The world is not eternal.

Ex. 8. Some animals are amphibious.

Ex. 9. Every sin is a violation of the Divine Law.

Ex. 10. No virtue is an evil.

Ex. 11. Law is the expression of mind.

Ex. 12. Every effect must have had an adequate cause.

Ex. 13. Some difficult things are not evils.

Ex. 14. Some rich men are not good men.

Ex. 15. Swammerdam* was an eminent entomologist.

Ex. 16. To arrange and organize matter is the work of mind.

Ex. 17. All the Chinese are animals.

Ex. 18. Some of the Parisians are not learned.

Ex. 19. Some birds are aquatic.

Ex. 20. Some trees are evergreens.

Ex. 21. Some reptiles are not quadrupeds.

Ex. 22. Gregory† was the first discoverer of the achromatic powers of the eye.

Ex. 23. Dollond‡ was the first discoverer of the achromatic telescope.

Ex. 24. Hipparchus was an inquirer into Egyptian and Chaldean Astronomy.

Ex. 25. Harvey§ was the discoverer of the circulation of the blood.

Ex. 26. Fohi was the founder of the Chinese monarchy.

Ex. 27. Chemical affinity never formed an organized being.

Ex. 28. Nature is that order of things which Supreme Intelligence has established.

Ex. 29. All marks of design are proofs of intelligence.

Ex. 30. Nothing but an efficient cause could give existence to what had no existence before.

Ex. 31. The whole is greater than any of its parts.

Ex. 32. The three angles of a triangle are equal to two right angles.

Ex. 33. All the eyes in the world are distinct witnesses that an intelligent first cause exists.

It is recommended that the student should for exercise write these examples on paper, and having prefixed to each the letters A, E, I, or O, as the case may require, should according to the rules, A distributes the subject, O the predicate, I neither, and E both, draw a line over every distributed term.

*Of Amsterdam. † A mathematician of Aberdeen, he died in 1675.
‡ A London Optician.
§ A physician of London.

(Art. 86.) The *matter* of a proposition is said to be NECESSARY, when its two terms essentially agree; IMPOSSIBLE, when they essentially disagree; or CONTINGENT, when they agree or disagree accidentally.

1. As, *a globe is a round figure;* i. e. NECESSARILY SO. *Sheep are covered with wool;* i. e. to be covered with wool is essentially NECESSARY to their character. *No globe is square;* the matter here is IMPOSSIBLE: *no quadruped sings;* IMPOSSIBLE: insects live on flowers; it is CONTINGENT; some do, and some do not.

(Art. 87.) In *necessary* and *imposible* matter, an indefinite proposition is understood as a UNIVERSAL; in *contingent matter*, as a PARTICULAR. A *singular proposition* is generally taken as a UNIVERSAL.

1. As, *birds have wings*, i. e. *all*, for the matter is NECESSARY; *birds are not quadrupeds*, i. e. *none*, for the matter is IMPOSSIBLE; *birds sing*, i. e. some do, for the matter is CONTINGENT: *birds are not large animals*, CONTINGENT, only *some* are not:—therefore,

(Art. 88.) To an indefinite proposition whose matter is necessary or impossible, prefix A or E, according as it is affirmative or negative, to denote that it is a universal; but prefix I or O, according as it is affirmative or negative, when its matter is contingent.

(Art. 89.) To a singular proposition, generally, prefix A or E, according as it is affirmative or negative, to denote that it is universal.

1. As, *Galvani was an Italian:* here we speak of the *whole* of Galvani. But when some qualifying word indicates that the whole subject is not spoken of, the proposition is *particular;* as *Cæsar was not* WHOLLY *a tyrant; this man is* OCCASIONALLY *intemperate.*

INTERROGATORY EXAMINATION

ON

CHAP. IV.

Q. 1. When is a term said to be distributed? 83.

Q. 2. When is a term said to be not distributed? 83.

Q. 3. When a term, understood or taken for every thing to which it is capable of being applied, can be predicated of the other term of a proposition, is that term distributed or not?

Q. 4. When a term understood for only a portion of the things signified by it, is predicated of the other term of that proposition, is the term distributed or not distributed? 83.

Q. 5. Can you repeat the general rule for the distribution of terms? 85.

Q. 6. What kind of proposition is signified by A?

Q. 7. What kind by E?

Q. 8. What kind of proposition is denoted by I?

Q. 9. What kind by O?

Q. 10. Which two letters denote universal propositions?

Q. 11. Which two letters denote particular propositions?

Q. 12. Which two letters denote affirmative propositions?

Q. 13. Which two letters denote negative propositions?

Q. 14. If A affirms what does E?

Q. 15. If I affirms what does O?

Q. 16. If E. denies what does A?

Q. 17. If O denies what does I?

Q. 18. Which two affirm?

Q. 19. Which two deny?

Q. 20. Of the four propositions denoted by A, E, I, O, which distributes the subject only?

Q. 21. Of A, E, I and O which distributes the predicate only?

Q. 22. Of A, E, I and O which distributes neither subject nor predicate?

Q. 23. Of A, E, I and O which distributes both of its terms, the subject and predicate?

Q. 24. To the following propositions prefix their proper letters or symbols,

All the planets change their places,
Every metal is fusible,
No quadruped has feathers,
Some trees are evergreens,
Some trees do not bear moss.

Q. 25. To the following singular and indefinite propositions, prefix their proper letters.

Remus was the brother of Romulus,
The planets change their places,

Good men do not altogether die,
Abraham did not altogether die,
Clothes are necessary to warmth.

Q. 26. What kind of a proposition is "All free agents are accountable," and which term is distributed? 85, ex. 5.

Q. 27. Why is the subject of the above proposition distributed? Rule 85.

Q. 28. What kind of proposition is, "Some animals are amphibious?" and is either of its terms distributed? 85, ex. 8.

Q. 29. Why is no term of the above proposition distributed? Rule 85.

Q. 30. Show what is distributed in the proposition, "No virtue is an evil." 85, ex. 10.

Q. 31. Repeat that part of the rule which declares what in the above proposition is distributed. 85.

Q. 32. Show what term is distributed in the proposition, "Some difficult things are not evils." 85, ex. 13.

Q. 33. Repeat that part of the rule which refers to this proposition. 85.

Q. 34. In the proposition, "Law is an expression of the mind," what is distributed? 85, ex. 11.

Q. 35. Repeat that part of the rule which refers to this proposition. 85.

Q. 36. In the proposition, "Some reptiles are not quadrupeds," what is distributed? 85, ex. 21.

Q. 37. Repeat that part of the rule which refers to this proposition? 85.

Q. 38. When may the matter of a proposition be said to be necessary? 86.

Q. 39. In the proposition, "All triangles have three sides," is the matter necessary, impossible or contingent? 86.

Q. 40. When may the matter of a proposition be said to be impossible? 86.

Q. 41. In the proposition, "No square is round," is the matter necessary, impossible or contingent? 86.

Q. 42. When may the matter of a proposition be said to be contingent? 86.

Q. 43. In the proposition, "Quadrupeds have horns," is the matter necessary, impossible, or contingent? 86.

Q. 44. When may an indefinite proposition be said to be universal? 87.

Q. 45. Why is the proposition, "Fishes are animals that swim," universal? 87.

Q. 46. When may an indefinite proposition be said to be particular? 87.

Q. 47. Why is the proposition, "Birds are animals that live on flesh," particular? 87.

Q. 48. What is the general character of a singular proposition? 87.

Q. 49. When is a singular proposition particular? 89 note 1.

Q. 50. To the following propositions prefix A, E, I, and O, according to their character, with the words, all, every, no, none, some, &c., as the case may require, and then by the rule (85) mark on paper those terms which are distributed.

Globes are round,
Globes are not square,

Quadrupeds have horns,
Birds are not animals that live on flesh,
Cicero was a Roman,
Zoilus was not *wholly** red-haired.

CHAP. V.

On the opposition and conversion of propositions.

N. B. Though the introduction of the opposition and conversion of propositions, is, in the synthetic order, proper here, yet it is not absolutely necessary that the learner should devote minute attention to this part of the general subject, until he come to the "reduction of syllogisms." He may, therefore, with all propriety, if his instructor prefer it, pass NOW to the two first chapters on argumentation, and before he enters on the third, he should then revert to the present chapter, to which he may add the following on evidence, induction, and analogy. Afterwards he will be prepared to go through, in the most impressive and agreeable manner, with that further course necessary to render him competent to expose more easily a fallacy concealed in an *apparent* syllogism, by its *reduction* into correct mood and figure.

SECTION I.

On Opposition.

(Art. 90.) Two propositions are said to be OPPOSED, which having the same subjects and predicates, yet differ either in QUANTITY or QUALITY, or in BOTH.

1. Examples,

A. All diseases are contagious,
I. Some diseases are contagious, } in quantity.

A. All diseases are contagious,
E. No disease is contagious, } in quality.

A. All diseases are contagious,
O. Some diseases are not contagious, } in both.

E. No disease is contagious,
I. Some diseases are contagious, } in both.

(Art. 91.) With any given subject and predicate four dis-

* He was with respect to his head, but not with respect to his beard.

tinct propositions may be stated, viz: A, E, I, and O; any two of which may be said to be *opposed.*

1. As, A, *every vine is a tree;* E, *no vine is a tree;* I, *some vine is a tree;* or O, some vine is not a tree.

(Art. 92.) There are four different kinds of opposition, viz: 1st, the two universals, A and E, are called CONTRARIES; 2d, the two particulars, I and O, SUBCONTRARIES; 3d, A and I, or E and O, SUBALTERNS; 4th, A and O, or E and I, CONTRADICTORIES.

Contraries.	A. Every vine is a tree. E. No vine is a tree.	These can never be both true together, but they may be both false.
Subcontrary.	I. Some vine is a tree. O. Some vine is not a tree.	These may be both true together, but they can never be both false.
Subalterns.	A. Every vine is a tree. I. Some vine is a tree. or E. No vine is a tree. O. Some vine is not a tree.	Rules.—1st. If a universal be true, the particular will be true also; but on the contrary, 2d, if a particular be false, the universal must be false; but not on the contrary. 3d, Subaltern propositions, whether universal or particular, may sometimes be both true, and sometimes both false.
Contradictories.	A. Every vine is a tree. O. Some vine is not a tree. or E. No vine is a tree. I. Some vine is a tree.	These can never be both true or both false at the same time.

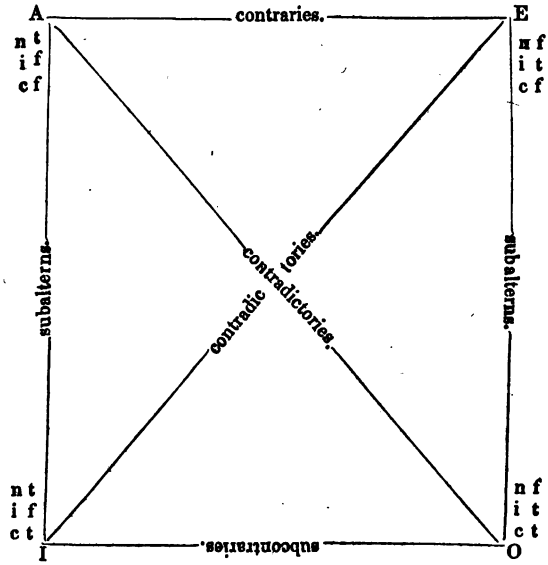
(Art. 93.) CONTRARY OPPOSITION is that which is between *two universals;* SUBCONTRARY between *two particulars;* SUBALTERN between two propositions *agreeing in quality, but not in quantity;* CONTRADICTORY between two *differing both in quantity and quality.*

1. The truth or falsity of any proposition, its quantity and quality being known, must depend on the matter of it: and we must remember that, *in necessary matter all affirmatives are true, and negatives false; in impossible matter, all affirmatives are false, and negatives true; in contingent matter, all universals are false, and particulars true.*

2. Thus, that "all islands, (or some islands) are surrounded with water," must be true, *because the matter is necessary:* but to say, "no island is surrounded with water," or "some islands are not surrounded with water," would be false, *for the matter is impossible.* Again; "some islands are fertile," and "some islands are not fertile," are both true, *because the*

matter is contingent, and the propositions particular: but put "all" or "no," instead of some, as "all islands are fertile," or "no island is fertile," and the propositions are false, *because the matter is contingent and the propositions universal.*

3. The whole doctrine of opposition is contained in the following scheme; where A, E, I and O denote the four propositions, according to their *quantity and quality*, which are marked t *true*, f *false*, as the matter is n *necessary*, i *impossible*, or c *contingent.*



4. "By a careful study of this scheme, bearing in mind, and applying the above rule concerning *matter*, the learner will easily elicit all the maxims relating to opposition; as that, in the subalterns, the truth of the particular follows from the truth of the universal; and the falsity of the universal from the falsity of the particular; that subalterns differ in *quantity alone;* contraries, and also subcontraries, in *quality* alone; contradictories, in both; and hence, that if any proposition is known to be true, we infer that its contradictory is false; if false, its contradictory is true."—*Whately.*

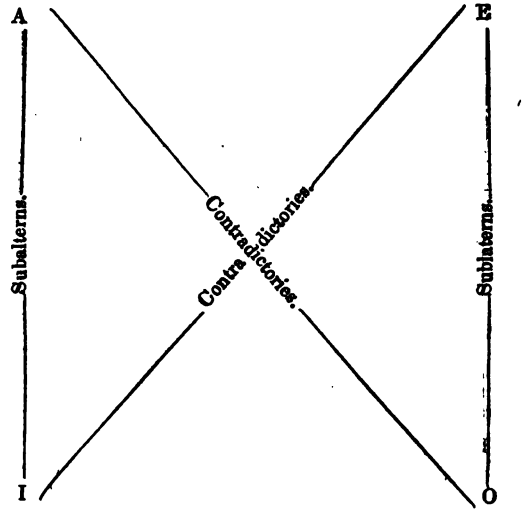
5. To assist the student in the study of this scheme, we shall give three examples, of *necessary*, *impossible* and *contingent*

matter, arranged after the same order, with the consequences true or false, expressed.

1st. NECESSARY MATTER.

true. *false.*

All birds are animals. (contraries) No bird is an animal.



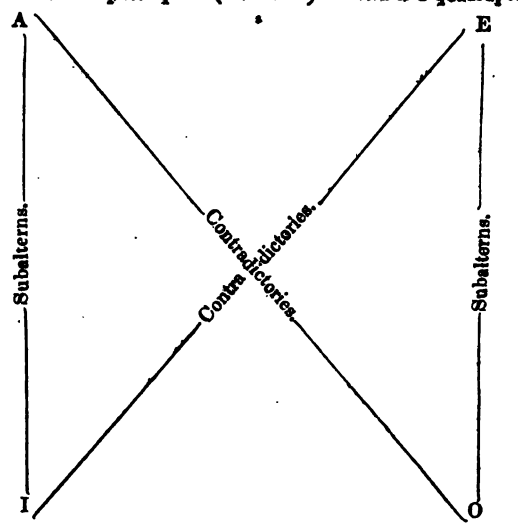
Some birds are animals. (sub-contraries) Some birds are not animals.

true. *false.*

2dly. IMPOSSIBLE MATTER.

false. *true.*

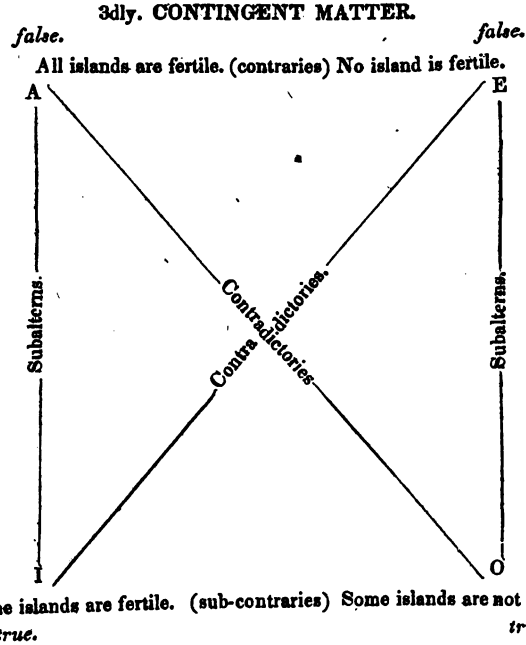
All birds are quadrupeds. (contraries) No bird is a quadruped.



Some birds are quadrupeds. (sub-contraries) Some birds are not quadrupeds.

false. *true.*

3dly. CONTINGENT MATTER.



(Art. 94.) The rules of opposition are,

Rule 1. Contradictory propositions are always one true, and the other false.

Rule 2. Four conditions are requisite to constitute a contradiction, viz. to speak of the same thing, 1, in the same sense; 2, in the same respect; 3, with regard to the same third thing; and 4, at the same time. If any of these be wanting, *is* and *is not* may agree.

1. For example, 1, An opinion *is* and *is not* faith. It is *dead* faith; it is not *living* faith. 2, Zoilus *is* and *is not* red haired. He is with respect to his head; he is not with respect to his beard. 3, Socrates *is* and *is not* long haired. He is in comparison of Scipio; he is not in comparison of Xenophon. 4, Solomon *was* and *was not* a good man. He was in his youth; he was not in his middle age.

Rule 3. Contrary propositions are never both true; but in contingent matter, they are both false.

Rule 4. Subcontraries are never both false; but in contingent matter, they are both true.

Rule 5. Subalterns are sometimes both true; sometimes both false; and in contingent matter, the one is true and the other false.

1. In subalterns, the truth of the particular (which is called the subalternate, follows from the truth of the universal, subalternans;) and the falsity of the universal from the falsity of the particular.

2. Subalterns differ in *quantity* alone; contraries and subcontraries in *quality* alone; contradictories in both; and hence if any proposition is known to be true, we infer that its contradictory is false; if false, the contradictory is true.

3. As frequent mention is made relative to agreement or disagreement in quality or quantity, it will be proper to observe, that the relative positions of the four principal propositions, A, E, I and O, in the above figure, with the connectives between any two of them, studied as they stand, or the whole figure frequently sketched by the learner, and well kept in mind, will, with the aid of the four following rules, be found very serviceable to the memory.

Rule 6. Of propositions, affirmatives and negatives indicate the *quality*, universals and particulars the *quantity*.

Rule 7. In *quality*, subalterns agree, contraries and subcontraries disagree.

Rule 8. In *quantity*, contraries and subcontraries agree, but subalterns disagree.

Rule 9. In *both*, contradictories disagree.

4. The whole doctrine of opposition may, for every practical purpose, be thus compressed,

(Art. 95.) A and E are contraries; I and O subcontraries; A and I, or E and O subalterns; A and O, or E and I contradictories.

(Art. 96.) In NECESSARY MATTER, A and I are *true*, but E and O are *false;* in IMPOSSIBLE, A and I are *false*, but E and O are *true;* in CONTINGENT MATTER, A and E are *false*, but I and O are *true*.

1. In addition to Art. 93, it may not be improper to add, that by "*subalternation*," we are to understand "the deducing either a less universal proposition from a more universal; or a particular from a universal." Subalternation, therefore, is in compliance with Aristotle's dictum, by which we are authorized to predicate of that which is contained, whatever is predicated of that which contains it; as of a species, whatever is predicated of its genus; of a class, whatever is predicated of its species; or of an individual, whatever is predicated of its class; or, in short, of a particular proposition, whatever is predicated of its universal; as of I, whatever is predicated of its universal A; or of O, whatever is predicated of its universal E: which will hold good whenever the universals are true. In this *subalternation*, the universal is called the *subalternans*; the particular inferred from it, the *subalternate*; and the opposition between them, i. e. between A and I, or E and O, *subaltern*; as

2. SUBALTERNS.

Necessary matter.

Subalternans, A. All birds are animals,
Subalternate, I. Some birds are animals, } both true,

or

Subalternans, E. No bird is an animal,
Subalternate, O. Some birds are not animals, } both false,

Impossible matter.

Subalternans, A. All birds are quadrupeds,
Subalternate, I. Some birds are quadrupeds, } both false,

or

Subalternans, E. No bird is a quadruped,
Subalternate, O. Some birds are not quadrupeds, } both true.

The particular (or subalternate,) true or false, according as its universal (subalternans) is true or false.

Contingent matter.

Subalternans, A. All islands are fertile, : false,
Subalternate, I. Some islands are fertile, : true,

or,

Subalternans, E. No island is fertile, : false,
Subalternate, O. Some islands are not fertile, : true,

The universal is false, and its particular, tho' true, cannot be inferred from a false premise.

3. This exemplifies, (Art. 94, Rule 5) "Subalternans are sometimes both true, sometimes both false; in contingent matter the one is true, and the other false."

4. It will be useful to compare the three following remarks, relative to subalternation with Aristotle's dictum, viz: that "*Whatever may be predicated universally of any class of things, may be predicated of any thing comprehended in that class.*"

1. The truth of a general or particular proposition may be inferred from the truth of the universal which contains it; as

Universal, A. All islands are surrounded by water, : true.
Particular, I. Some islands are surrounded by water : true.

"For if the predicate contains the whole extension of the subject, in its extension, it will likewise contain a part of it."

2. The truth of a particular does not infer the truth of a universal; as

Universal, A. All islands are fertile, : false,
Particular, I. Some islands are fertile, : true.

Very true: for Aristotle's dictum does not require any reasoning from a particular to a universal.

3. The falsehood of a universal does not infer the falsehood of a particular; as,

Universal, A. All islands are fertile, : false.
Particular, I. Some islands are fertile, : true.

Equally true, for nothing can be infered from a false premiss: i. e. nothing can be *illatively** infered, as *true*, from that which is *false*. The "*Dictum*," made no provision for any such consequence.

5. It will easily be perceived why the following are

CONTRARIES.

Necessary matter.

A. All islands are surrounded with water : true.
E. No island is surrounded with water : false.

Impossible matter.

A. All islands are under water : false.
E. No island is under water : true.

Contingent matter.

A. All islands are fertile : false.
E. No island is fertile : false.

According to (Art. 94, Rule 3,) "Contraries are never both true, but, in contingent matter, they are both false."

SUB-CONTRARIES.

Necessary matter.

I. Some islands are surrounded with water : true.
O. Some islands are not surrounded with water : false.

* i. e. *Inferentially*; which in English we express by *therefore*. The latter of the two following propositions is *illative*, because it is infered by *therefore*, from the former:

No virtuous man is a dishonest man; *therefore*
No dishonest man is a virtuous man.

Impossible matter.

I. Some islands are under water : false.
O. Some islands are not under water : true.

Contingent matter.

I. Some islands are fertile : true.
O. Some islands are not fertile : true.

According to (Art. 94, Rule 4,) "Sub-contraries are never both false, but, in contingent matter, they are both true."

CONTRADICTORIES.

Necessary matter.

A. All islands are surrounded with water : true.
O. Some islands are not surrounded with water : false.

or,

E. No island is surrounded with water : false.
I. Some islands are surrounded with water : true.

Impossible matter.

A. All islands are under water : false.
O. Some islands are not under water : true.

or,

E. No island is under water : true.
I. Some islands are under water : false.

Contingent matter.

A. All islands are fertile : false.
O. Some islands are not fertile : true.

or,

E. No island is fertile : false.
I. Some islands are fertile : true.

According to (Art. 94, Rule 1,) "Contradictories are always one true, and the other false."

SECTION II.

On the conversion of propositions.

The conversion, as well as the opposition of propositions, will be found chiefly useful in the reduction of syllogisms into correct mood and figure.

(Art. 97.) A proposition is said to be CONVERTED, when its terms are transposed.

1. i. e. When the subject is made the predicate, and the predicate the subject; as,

E. No unhappy man is a perfect Christian; *therefore*
E. No perfect Christian is an unhappy man.
N. B. Both terms in each are *distributed.*

(Art. 98.) The proposition to be convertedis the ORIGINAL; that into which it is converted, the CONVERSE; as

Original. E. Nothing useful is vice: *therefore*
Converse. E. No vice is useful.
Both terms in each are *distributed.*

(Art. 99.) *INFERENTIAL CONVERSION is that, when the truth of the converse may be expressed by the word, *therefore, consequently* or *wherefore ;* or as something *infered* from the truth of the original.

1. As,

Original. E. No virtuous man is a rebel; *therefore*
Converse. E. No rebel is a virtuous man.

2. It should not be supposed from the word "inferential" that this conversion is a process of reasoning: it is in fact only stating the same judgment in another form.—*Whately, p.* 58.

(Art. 100.) No conversion is employed for any logical purpose *when either any term is distributed in the converse which was not distributed in the original,* or *when it is not inferential.*

1. If any term be distributed in the converse which was not distributed in the original, a term may be employed *universally* in the converse which was employed only *partially* in the original, as

Original. A. All birds are animals. } not
Converse. A. All animals are birds. } inferential.

In the converse, the term "animals," is distributed which was not distributed in the original: therefore, in the original it was employed only partially, but in the converse universally; and cannot be *inferential.*

2. *Conversion is never inferential when any term is dis-*

* This has been called "illative:" thus the particles *ergo, ideo, igitur, idcirco, itaque, quapropter,* &c. are said to be illative. The word "*inferential,*" however, may be more generally understood.

tributed in the converse which was not distributed in the original: a few cases however occur where the conversion is not inferential, when the distribution of both propositions complies with the condition.

3. This, however, may be clearly stated in the following manner, wherein all the possible conversions, inferential or otherwise, which can be made with the four originals, A, E, I or O are given, according to the rule, with which it is hoped the learner is now well acquainted, viz. "*A distributes the subject, O the predicate, I neither, and E both,*" every distributed term will be marked as usual, viz. with a line above it; and the word *therefore* will be prefixed to every converse which, according to article 100, is inferentially deducible from its original.

CASE I.

Where A is the Original.

	A. All $\overline{\text{birds}}$ are animals.	ORIGINAL.
Excluded.	A. All $\overline{\text{animals}}$ are birds.	*Converse.*
Excluded.	E. No $\overline{\text{animal}}$ is a $\overline{\text{bird}}$.	*Converse.*
THEREFORE	I. Some animals are birds.	*Converse.*
Not inferential.	O. Some animals are not $\overline{\text{birds}}$.	*Converse.*

CASE II.

Where E is the Original.

	E. No $\overline{\text{bird}}$ is a $\overline{\text{quadruped}}$.	ORIGINAL.
THEREFORE	E. No $\overline{\text{quadruped}}$ is a $\overline{\text{bird}}$.	*Converse.*
Not inferential.	A. All $\overline{\text{quadrupeds}}$ are birds.	*Converse.*
Not inferential.	I. Some quadrupeds are birds.	*Converse.*
THEREFORE	O. Some quadrupeds are not $\overline{\text{birds}}$.	*Converse.*

CASE III.

Where I is the Original.

	I. Some animals are birds.	ORIGINAL.
THEREFORE	I. Some birds are animals.	*Converse.*
Excluded.	A. All $\overline{\text{birds}}$ are animals.	*Converse.*
Excluded.	E. No $\overline{\text{bird}}$ is an $\overline{\text{animal}}$.	Converse.
Excluded.	O. Some birds are not $\overline{\text{animals}}$.	Converse.

CASE IV.

Where O is the Original.

	O. Some animals are not $\overline{\text{birds}}$.	ORIGINAL.
Excluded.	O. Some birds are not $\overline{\text{animals}}$.	*Converse.*
Not inferential.	A. All $\overline{\text{birds}}$ are animals.	*Converse.*
Excluded.	E. No $\overline{\text{bird}}$ is an $\overline{\text{animal}}$.	*Converse.*
Not inferential.	I. Some birds are animals.	*Converse.*

It is therefore evident that the above rule allows of only the following cases of correct conversion; viz. A into I; E into E, or E into O, and I into I, for in not any of these cases is any term distributed in the converse which was not distributed in the original; they are therefore inferential.

But A cannot be converted into A, nor into E, for in either case the converse would have the term "animal" distributed, which was not distributed in the original; for the same reason O cannot be converted into O nor into E.

I cannot be converted into A, into E, nor into O; for each of these has one or more terms distributed, whereas I has none.

Though in the following examples there is no term distributed in the converse which was not distributed in the original, contrary to the *first* part of rule 100, yet not being *inferential*, they are not consistent with its second part.

From A. All birds are animals; it is not inferential that
O. Some animals are not birds.

From E. No bird is a quadruped, it cannot be infered
that A. All quadrupeds are birds,
or that I. Some quadrupeds are birds.

From O. Some animals are not birds, it is not inferential
that I. Some birds are animals.

(Art. 101.) Inferential conversion is twofold; SIMPLE and PARTICULAR.

(Art. 102.) SIMPLE CONVERSION* is that, when, after the interchange of subject and predicate, E remains E, or I remains I; as

Original. E. No predacious animal is ruminant; *therefore*
Converse. E. No ruminant animal is predacious.—Or,
Original. I. Some knowing the Coptic language are Arabians; *therefore*
Converse. I. Some Arabians are men knowing the Coptic.

2. Simple conversion is sometimes said to be effected when neither the quantity nor quality is changed; as E into E, or I into I; this, however, would hold equally good were A converted into A, or O into O; neither of which, as we have already seen, is admissible, on account of terms distributed in the converse not distributed in the original, and consequently not inferential.

* By simple conversion here must be understood that which is inferential.

3. The only case where A can, consistently with truth, be converted into A, is in *reciprocal* propositions, or where the subject and predicate reciprocate or interchange with one another, without a change in sense; as, *Wine is the juice of the grape*, or *the juice of the grape is wine. All triangles are figures bounded by three right lines*, or *all figures bounded by three right lines are triangles.* This is always the case in propositions whose predicates are exact definitions of the subject.

(Art. 103.) Particular conversion is that which converts a universal proposition into its own *particular:* as A into I, or E into O; 1. as,

A. All chronometers are time-pieces; *therefore*
I. Some time-pieces are chronometers.

or,

E. No vice is a useful thing; *therefore*
O. Some useful things are not vices.

2. This kind of conversion was formerly called "*conversio per accidens*," or "*accidental:*" also *limitation*, because it limits the quantity; but *particular* conversion, indicating that it is from a universal proposition to a *particular*, is a name more suited to its character.

2. There is another mode of conversion, called by some, conversion by *contra-position:* by Dr. Whately, "*conversion by negation.*" But since it is in no way serviceable in the reduction of syllogisms, we mention, without recommending it to notice. It is effected either by the insertion of a negative particle, hence called negation, both in the subject and predicate; or by the change of a positive into a privative or other term, signifying the absence of the attribute expressed in the original. Thus O may be converted into I; E may be converted this way,

O. Some members of the university are not learned.

If "not learned" be considered as the predicate, or the privative term unlearned put instead of its positive learned, the above proposition becomes I, and may then be simply converted; as,

I. Some members of the university are not learned.

rather,

I. Some members of the university are unlearned men.

which by simple conversion becomes

I. Some unlearned men are members of the university.

A. Every poet is a man of genius; therefore
He who is not a man of genius is not a poet,
or, none but a man of genius can be a poet,
or, a man of genius alone can be a poet.

The original proposition is equivalent to this,

subj. pred.
E. No poet is not-a-man-of-genius,
which may simply be converted
subj. pred.
E. None, not-a-man-of-genius, is a poet.

3. Dismissing the whole of this conversion by negation, introduced by some, as unnecessary, we proceed to state that the whole doctrine of conversion may, for every practical purpose, be easily remembered by the aid of the following summary rule,

(Art. 104.) By simple conversion E is converted into E, and I into I; by particular conversion, A into I; and E into O.

1. Simple conversion in the reduction of syllogisms is always represented by the letter S; particular conversion by the letter P.

INTERROGATORY EXAMINATION,

ON

CHAP. V.

Q. 1. What do you understand by propositions being said to be opposed to one another? Art. 90.

Q. 2. What are the symbols by which propositions are represented?

Q. 3. Repeat the memorial lines expressive of the four principal kinds of propositions.

Q. 4. What is meant by the *quantity* of a proposition?

Q. 5. What is meant by the *quality* of a proposition?

Q. 6. What does A represent?

Q. 7. What does E represent?

Q. 8. What does I represent?

Q. 9. What does O represent?

Q. 10. Are A and E opposed in quantity or *quality?*

Q. 11. Are I and O opposed in quantity or quality?

Q. 12. Are A and I opposed in quantity or quality?
Q. 13. Are E and O opposed in quantity or quality?
Q. 14. How are A and O opposed?
Q. 15. How are E and I opposed?
Q. 16. Out of A, E, I and O, select those two which are universals.
Q. 17. Out of A, E, I and O select those two which are particulars.
Q. 18. Out of A, E, I and O, select those two which are affirmatives.
Q. 19. Out of A, E, I and O, select those two which are negatives.
Q. 20. How many kinds of opposition are there? 92.
Q. 21. What is contrary opposition? 93.
Q. 22. What is subcontrary opposition? 93.
Q. 23. What is subaltern opposition? 93.
Q. 24. What is contradictory opposition? 93.
Q. 25. What do the other symbols, t, f, n, i, c, represent? 93, note 3.
Q. 26. What is the first rule of opposition? 94, rule 1.
Q. 27. What is the second rule of opposition? 94, rule 2.
Q. 28. What is the third rule of opposition? 94, rule 3.
Q. 29. What is the fourth rule of opposition? 94, rule 4.
Q. 30. What is the fifth rule of opposition? 94, rule 5.
Q. 31. Can you repeat by heart those two rules into which the whole doctrine of opposition is compressed? 95 and 96.
Q. 32. What do you understand by the conversion of propositions? 97.
Q. 32. Give an example of conversion.
Q. 33. What is that proposition called which is proposed to be converted? 98.
Q. 34. What is that proposition called which is converted from its original? 98.
Q. 35. Explain inferential conversion. 99.
Q. 36. What is the general law of all correct conversion? 100.
Q. 37. What is the reason that the proposition A, cannot generally be converted into A?
Q. 38. What is the reason that the following proposition which is A, cannot be converted into A? viz:

A. All the Pennsylvanians are Americans.

Q. 39. How many kinds are there of inferential conversion? 101.
Q. 40. What is simple conversion? 102.
Q. 41. When after the interchange of subject and predicate, which always takes place in conversion, E remains E still, and I remains I, what kind of conversion is that?
Q. 42. What is particular conversion? 103.
Q. 43. When a universal is converted into its *own* particular, what kind of conversion is that? 103.
Q. 44. When A is converted into I, or E into O, what kind of conversion is that?
Q. 45. Can you repeat by heart one rule which comprises, for all practical purposes, the whole doctrine of conversion? 104.

ON EVIDENCE.

INTRODUCTORY REMARKS.

1. Hitherto the subjects of our inquiry have been propositions and their parts; and a proposition is an act of judgment determined on *evidence*, and expressing that a being, is, or is not; since "sum" is equal to "*I* am *existing*, or *I* am *an existent being*;" or that any two things agree or disagree.

2. Since every act of argumentation, correctly and fully stated, implies two premises, each a proposition, independently of the conclusion, these propositions, therefore, or the two acts of judgment which they involve, are the foundation of our reasoning, and of our true or false conclusions.

3. Since the evidence necessary to determine our judgment on all the subjects that may claim our attention, is co-extensive with the whole range of being of which we can have any knowledge; or with the whole circle of all the several sciences themselves, and which it is properly the business of those sciences respectively to impart; and also, since Logic is more strictly concerned with the third act of the mind, reasoning or argumentation, Dr. Whately, properly confines the whole of his treatise to what is merely necessary to explain the correct mode by which that act can be expressed, not accounting it his business as an author or lecturer on logic, to determine your judgment, as a student, relative to the truth or falsity of any proposition, notwithstanding that your conclusion must be deduced from two premises, or from two acts of judgment expressed or implied. That is, the lecturer on Logic expects you, as a student, to come as fully prepared with ideas, and with all that knowledge, evidence and conviction, as are necessary to enable you to form your own propositions, of which it is his business only to show the correct expression, and if they are duly connected with the conclusion. Logic, *strictly* speaking, is merely concerned with the *distinction* of terms, and the *form* not the *matter* of the proposition. It is the business of the student to see that the terms suitably *express* his own ideas, and that his propositions declare his judgment of the agreement or disagreement of them according to the knowledge he has. But with the mode in which any two of those propositions are or can be connected so as to form a syllogism, or an act of argumentation correctly stated, and with the detection of such conclusion as is irregularly deduced from them, Logic is *immediately* concerned; whilst you are at liberty to gain all the knowledge and evidence that compose your premises from

science of any kind, and from the universe of things around you.

3. We repeat that Dr. Whately, and before him, Mr. Wesley,* were right in this proper and limited view of the peculiar province of Logic; as much as the Lecturer on Book-keeping, when he expects that his pupil comes to him duly prepared with a knowledge of arithmetic. The lecturer on Book-keeping, does not account it to be his business to instruct his pupil in the science and practice of calculation, whether of interest, discount, commission or exchange, but merely in the business of journalizing, posting and balancing a set of mercantile books. The very circumstance of representing it to be the province of Logic, not only to teach the art of reasoning, but also to furnish all the ideas, knowledge and evidence of the truth of propositions, which, of course, must be as extensive as the unlimited science of ontology, is not only in itself absurd, but has through mystifying the specific object of Logic, in a mass of irrelevancy, from which the discrimination of ages has not, until lately, rescued it, done more to deprive men generally of the simple art of reasoning correctly, and of detecting fallacies, however artfully concealed, than is commonly imagined. For this reason, therefore, it is by no means urged on the instructor to arrest the pupil's progress, but rather to allow him to proceed immediately from the chapters on propositions to those on syllogisms; after which the present chapter on evidence and the two following on induction and analogy may constitute useful subjects of more leisure perusal.

Neither is it asserted on the other hand, that knowledge and evidence are not necessary to judgment, and to its correct expression in a proposition, since, without them, the latter could not exist. Knowledge and experience, it is the business of our mortal, if not of our immortal lives to obtain. The various degrees of knowledge possessed by different individuals are already indefinite; but there is no necessity on this account that any one should not use, even in Logic, whatever degree of knowledge he has, because he has not now all he may have. *Special* evidence, or the evidence which belongs to each department of knowledge, would lead us through all the sciences, and through the whole path of life, a path which every one must travel for himself; and as he travels learn to use what knowledge and evidence he has correctly to purposes salutary to himself, and to the circle of society around him. In contradistinction, however, to *special*, we shall, in this chapter, merely advert to *general* evidence, or to those general principles and provisions in nature which determine our judgment, or enable us to express ourselves with confidence and accuracy on that ground where logic meets us, namely, on that of the propositions.

* See Compendium of Logic, 4th edition. Sold by T. Blanshard, City Road, London.

CHAP. VI.

1. I am; or, I am existing.
I think; or, I am a being capable of sense and thought.
The sun is rising.
The snow is white.
That coal is hot.
A whole is greater than each of its parts.
It is impossible for the same thing, at the same time, to be, and not to be.
A killed B, according to the *testimony* of C.
The three angles of a triangle are together equal to two right angles.
Nothing, or that which is not a thing, cannot produce anything.
A being powerless cannot operate.
What is not an agent cannot act.
Every effect proceeds from a cause.
There is a God.
Man is accountable for his actions.

2. The above are propositions, each the proceed of a distinct act of judgment. Judgment is the result of *evidence*. The evidence, however, that determines the above propositions, is of different kinds. What assures me, "that I exist," that, "the sun is rising,"—"that coal is hot,"—"a whole is greater than each of its parts," is different from that, which informs me, that "the three angles of a triangle are together equal to two right angles;" and that again is likewise different from the evidence implied in the proposition, "A killed B, according to the *testimony* of C."

3. Our considerations on evidence necessarily involve the following particulars:

1st. That which testifies.
2d. That which is testified; or testimony.
3d. Evidence.
4th. The faculties of perceiving it.
5th. Conviction consequent on that perception.
6th. The moral consequences of that conviction.

(Art. 105.) THAT WHICH TESTIFIES, may be any being, ani-

mate or inanimate, the facts or experience of history, or the discoveries and deductions of science duly established.

1. That which testifies, or is capable of testifying to every rational mind, or creature having faculties competent to perceive, is any being animate or inanimate. Thus we are told that "the Heavens *declare* the glory of God; and the firmament *sheweth* his handy work. Day unto day *uttereth speech*, and night unto night sheweth knowledge. There is no speech nor language where *their voice* is not *heard*. Their line is gone out through all the earth, and their *words* to the end of the world."* "For the invisible things of him from the creation of the world are *clearly seen*, being *understood* by the things that are made, even his eternal power and Godhead; so that THEY ARE WITHOUT EXCUSE."†

> "In REASON'S EAR they all *rejoice*,
> And *utter forth* a glorious *voice*;
> For ever *singing* as they shine,
> *The hand that made us is divine.*"‡

This then is their TESTIMONY, "the hand that made us is divine."

2. Likewise not only the facts that occur during our own history or those of which we read in the history of nations; the axioms and truths of science intuitively perceived, or the volumes of demonstrative instruction, that are, for our investigation, open to us, in common with all that have the power and will to use the faculties we possess, are so many separate and distinct *testifiers*, or *sources of testimony*; as well as the two all important volumes of natural§ and revealed‖ religion, and the several and abundant aids that serve to explain them. Ἔχομεν μείζονα τὴν μαρτυρίαν.—John v. 39.

(Art. 106.) TESTIMONY is a tacit or express declaration,

* Psalms xix. 1 to 4. † Rom. i. 20. ‡ Addison.

§ See Ray on the Wisdom of God in the Creation, Derham's Astro and Physico Theology, Sturm's Reflections, the works of Cambray, Nieuwentyt, Bonnet, Swammerdam, Linne, Adams' Philosophy, Paley's Natural Theology; and a very excellent volume entitled, "the Class book of Natural Theology" by the Rev. H. Fergus, edited by the Rev. C. H. Alden, of Philadelphia.

‖ See Cudworth's Intellectual System, Newton and Kershaw on the Prophecies, Campbell on Miracles, Jennings on internal evidence, and Ditton and West on the Resurrection; the works of Leland and Leslie, Bishop of Landolph and Rev. A. Suter in answer to Paine; Rev. Simpson's (of Macclesfield) Plea, and also on the Divinity of Christ; Jortin on the Truth of Christianity; Drew on Immortality and also on the Resurrection; Bentley's Boyleian Lectures, and Jones on the Trinity. These with many others, are *testifiers*, or witnesses of the truth.

having a tendency to establish, or amount to *complete evidence* of the truth testified.

1. A, in a court of law, is accused of killing B, in the town Z. E, however affirms that this was not true, since he saw A 100 miles distant from the town Z, at the time in question. This, until contradicted by F, is supposed to be testimony, who satisfactorily proves that E has motives in common with A, and in addition to E's known want of integrity, that he instead of being 100 miles distant, was seen by F, in the town Z, at the time specified. The veracity of F is known, that of E suspected, and therefore that which was supposed to be testimony as given by E, is found to be false or no evidence at all. On the contrary, C affirms that he saw A kill B. This is the *testimony* of C, but as yet it is not *evidence*, since the character of C is not known, until D and others give not only satisfactory proof as to his integrity, but also further testify such corroborative facts, as render the *testimony* of C sufficient *evidence* to the judge and jury.

2. Thus in philosophy, A affirms that the liquid alkali, as well as the fixed, is reducible to a metallic base, and that he witnessed an experiment, *partially* successful, undertaken to prove its possibility. This is *testimony* having a tendency to establish or amount to a full proof or demonstration, but not certainty or *evidence*, until B, on whose integrity and veracity we have full reliance, assures us that he actually saw ammonia decomposed into the metal ammonium, and that the verity of the fact was tested by every proof that either the analytic or synthetic process could afford: this is *evidence*, and such that even A's former testimony is now admitted within the integral quantity of evidence which we possess.

3. Testimony by writers on Mental Philosophy is commonly called *probable evidence*. Testimony or probable evidence is distinct from demonstration or evidence. Demonstration or full evidence is such as not to admit the possibility of so adding demonstration to demonstration as to make the first clearer, or without tautology. Demonstration or evidence is so sufficient in itself that it *needs* no aid from any other, and it can receive none. I see the sun; so do you; but your telling me this, is to me, no additional proof that the sun is to be seen: or if, whilst I see the sun, you shut your eyes, your telling me that you see not the sun, does not invalidate my evidence that the sun is to be seen.

4. A affirms to B, C, D, that at such an hour and in such a

part of the heavens a comet is to be seen. B, at the time attends, but without glasses, C takes a refracting, and D a reflecting telescope. B *testifies* that he sees something, where he expected to see nothing, but he cannot tell what. The *testimony* of C is, that by his refractor, he discovers in that part of the heavens an appearance that he cannot account for, according to the catalogues furnished by either Flamstead or Cassini. But D testifies that by his powerful reflector, he not only sees the comet, but its tail and all the usual appendages. B, C, and D now use the reflector, and all see the same; and now the previous *testimony* amounts to *evidence*.

5. "The strength of probable reasoning," says Jamieson, "for the most part depends not upon any one testimony, but upon many, which unite their force and lead to the same conclusion. Any one of them by itself would be insufficient to convince; but the whole taken together may have a force that is irresistible. Who, for example, would now seek, after all the previous testimonies, new arguments to prove that there were such persons as Maria Antoinette, Queen Charlotte, Charles the first, or Oliver Cromwell?"

6. Every testimony, acknowledged to be such, produces a *proportional degree of assent or belief*. The judgment may be in suspense between two contradictory opinions, when there is nothing to amount to evidence for either. In proportion as credible testimony prevails on this side or on that, assent or belief in degree rises, until the several testimonies constitute full integral evidence, when, if the faculties of perception are sufficient and exercised, *testimony rises to evidence, and assent or belief to certainty*.

7. There are cases, when not in consequence of the want of evidence itself, but of the faculties not being able, through want of previous exercise, to perceive it *as such*, or to comprehend it in its integral totality, in which it does not appear without our being willing first to apprehend all the several testimonies that collectively, as component parts, constitute that evidence; which cannot, in such cases, be on any other condition obtained. Thus when tyro informs the mathematician that he is desirous to learn and practice the peculiar application of fluxions, he is informed that this he cannot do, unless he first willingly attend to arithmetic, algebra, geometry, and conic sections. C informs both A and B that if they will follow him, or embrace his counsel, he will conduct them to situations where both their circumstances will be prosper-

ous, and themselves happy. A refuses to do this unless he can have at once the full evidence that he shall realize what is promised. This full evidence, he is informed, not on account of its non-existence, but in consequence of his faculties not being strengthened by exercise or previous acquisition to receive it, he cannot, in the first case, have: *that the successive acquisitions of truth are obtained only by the successive exercises of the mind, and in no other way;* nevertheless that he shall, from time to time, be supplied with so much testimony *as he can comprehend*, until the several *testimonies* amount to *full evidence*, and his several acts of *assent or belief* shall amount to CERTAINTY. To this condition B (the believer) accedes, and enjoys the present and perpetual advantages, which A (the atheist) loses for ever.

8. On this very point may be seen and contemplated a very peculiar and important matter relative to our intellectual character. Evidence frequently cannot be perceived unless the mind expand by exercise, *accompanied with an adequate desire*, through the proper means, to obtain the end, until it is competent to receive all the evidence it can require. The mind of an infant cannot comprehend all that is known to an adult, any more than the latter can all that is known to the man of mature experience and practice. Should the mind of the infant through the whole of its minority be neglected, it will, when at the period of corporeal maturity, be an ignoramus. For the same reason, if the mind of the adult be neglected, even should it continue to be connected with mortality until it is three or four score, and surrounded too with all the mass of evidence it has neglected to use, it will "be weighed in the balances and found wanting." If truth or evidence is not perceived, it is not because that truth or evidence does not exist, and that too to the full extent that can concern us. Nor are they not perceived because we have not faculties, but because of our neglect or unwillingness so to exercise them in the proper means, and in the right way, as to enable us, from time to time, to apprehend as our exercise and consequent ability increase, the several testimonies that collectively will constitute that evidence, and afford us all the conviction and certainty of that truth, that a sentient, rational being can possibly desire; until all that which before required testimony added to testimony, and one proof to another in order that they should constitute evidence or demonstration, is now to us a matter of *intuitive conviction*, which no further testimony, evidence or demonstration can possibly

increase. Once I was blind, but now I see! Consequently, with my own unborrowed eyes, I see that sun; and therefore need not either any, nor all the glasses, spectacles or telescopes found in the store of the optician. Without them, or the need of any other help, I have unclouded evidence that there is a sun that shines on me, on all; and if some, either through a defect in the faculties of vision or a neglect of using them, see not that sun, it diminishes not the conviction and its consequences that I possess and enjoy.

9. Testimony or probable evidence, Dr. Reid divides as follows: 1. Human Testimony. 2. The authority of those who are good judges of the point in question. 3. That whereby we recognize the identity of things and persons. 4. That which we have of men's future actions and conduct from the general principle of action in man, or from our knowledge of the individuals. 5. That by which we collect men's character and designs from their actions and conversations. 6. The probability of chances. 7. That by which the known laws of nature have been discovered, and the effects which have been produced by them, in former ages, or which may be expected in time to come.

10. Human Testimony is that from which the greatest part of knowledge is derived. The faith of history is built upon it as well as the decisions of solemn tribunals. "When several independent original witnesses, with equal advantages for knowing the fact, and without any previous concert, agree in their report, they mutually strengthen each other's testimony. This concurrence of several independent testimonies is itself a probability distinct from that, which may be termed the sum of the probabilities, resulting from the separate testimonies. The circumstances constituting the *credibility* of a witness are, 1st, *Sufficient discernment, opportunity* and *attention*, to obtain a clear knowledge of the fact. 2. *Disinterestedness*, or the absence of all expectations of advantage or detriment, arising from the testimony. 3. *Integrity*, which affords the strongest assurance of a true testimony, inasmuch as it is absolutely inconsistent with any intention to deceive or prevaricate."*

11. Testimony of this kind is either *oral* or *written*. ORAL TESTIMONY is either *original* or *transmitted*, or what is generally termed *traditional*. It is *original* when it is derived from one who had sensible evidence of the fact asserted; and

* Elements of Logic by Levi Hedge, L. L. D.

transmitted or *traditional*, when given by one who obtained his knowledge from another or from any original witness. "WRITTEN TESTIMONY is usually esteemed stronger and more deserving of confidence than oral; for the record, being made, for the most part, without a knowledge of the uses to which it is afterwards applied, may be presumed to have been written without any undue bias: Farther, as the record of facts is usually made soon after they occur, this testimony is secure against any defects arising from the imperfection of memory. Written testimony is also less liable to have its credibility impaired by transmission than oral." If two or more written records, relative to the same facts, exist, and in all *material* points agree, the credibility is increased. Mere circumstantial variation as to points of minor consequence, not affecting what is essential, tends rather to increase than to diminish that credibility; for this is precisely what in all ordinary cases, will and must occur, where previous concert and collusion are excluded.

(Art. 107.) EVIDENCE is that complete testimony, or concurrence of testimonies, which is sufficient to produce certainty or conviction in faculties capable and willing to perceive it; *and remains sufficient evidence, though not perceived as such through a neglect in the exercise of the faculties of perception.*

1. For example, Euclid wrote a work containing self-evident axioms and demonstrations, on the subject of *intuitive* and *deductive* evidence, relative to the magnitude and extension of matter. This book has been read not only by the most scientific men, but by men of the strongest minds for two thousand years, and by them, without a dissentient voice, acknowledged to be, on the subject, a volume of evidence. In this book then *there is evidence* as acknowledged by all men that have any claim to rationality. But evidence as it is, and must remain to be, it conveys no conviction to the clown, to the man that prefers ignorance to knowledge, or darkness to light, and still less so to him, who through a perversity, not less than monstrous, of what once might have been rational, denies the veracity of his own senses, or the existence of matter, and consequently of magnitude and extension. Notwithstanding this, the evidence is to be found in this book, as much as a color, a sound, an axiom or a demonstration remain a color, a sound, an axiom or a demonstration, although the blind, the deaf and the lunatic perceive them not.

2. Three men are sitting with me in this room. We all appear to be looking through the window towards the opposite green. One man has the faculty of vision, but neglects to use it; his mind is vacant, and his attention unemployed. Another, through misemployment, weakened this faculty, and cannot see distinctly at a distance. The third, though not so blind but that he might recover his sight, yet has no desire to use the means. I see distinctly a mass of gold on that green. The *evidence* to me is so clear that I am *convinced* of it: but though evidence, it is not evidence to them. The consequence is, I have the advantage, and they the loss. This supposition, though expressed figuratively, refers to the case of thousands. Evidence, light, sufficient as to every necessary truth, actually exist, and that too within our reach. And the very existence of this light or evidence, whether we use it or not, renders us responsible.*

3. Besides it is only through a proper exercise of the faculties of perception that the mind acquires power so to perceive the *evidence* of some of the most sublime and interesting truths that concern us, that it can become *conviction*. "It is only by the means of something antecedent," said Dr. Johnson, "that any thing is known." But when all means of acquiring those antecedent ideas, or of laying the foundation, are neglected, how can we ever hope to arrive at the superstructure? Superabundant means of obtaining that evidence are before us; but if we neglect the means of perceiving it, to us that *evidence* can never become such *conviction* as to lead to *consequences identical with our happiness.*

(Art. 108.) THE FACULTIES OF PERCEIVING EVIDENCE are those, which, in *apprehension*, enable *mind* to form an idea of ONE term; in *judgment*, to determine the agreement or disagreement of TWO; and in *reasoning* to deduce a conclusion from THREE.

1. What faculties they are by which we perceive evidence, and by which we are ourselves beings capable of *assent, belief, conviction and certainty*, it is of importance to inquire. Were we to attend to the writers on Mental Philosophy, to those that insist on all the distinctions that Metaphysics, not Logic, would institute, we should require all the discrimination necessary to enable us to vary our terms to express these as different cases might require; as in *sensation, perception,*

* Αυτη δε εστιν η κρισις, οτι το φως εληλυθεν εις τον κοσμον, και ηγαπησαν οι ανθρωποι μαλλον το σκοτος, η το φως, ην γαρ πονηρα αυτων τα εργα. John iii. 19.

consciousness, imagination, conception, attention, association, memory, comparing, abstraction, and analysis; besides the powers of *thought* generally, and the *passions.* The distinctions detailed in this enumeration, and the mode of expressing them in general conversation, we shall chiefly leave to Metaphysics, and proceed to inquire what three mental acts are they with which evidence is concerned, and the names by which logicians are agreed, however, modified by circumstances, to express them; but not without briefly first considering the subdivisions to which we have just alluded.

2. By SENSATION is understood the functions performed by the five *corporeal* senses, seeing, hearing, feeling, tasting and smelling; which the *mind* expresses by saying I (the mind) see, hear, feel, taste, or smell. This latter, that is the mind's act, is called PERCEPTION, implying the faculty of perceiving an idea through sensation, not only whilst the object of sense is present but when removed. "The *sensations,* which are excited in the mind by external objects, and the *perceptions* of material qualities, which *follow* those sensations, are to be distinguished from each other only by long habits of patient reflection." (Stewart's Elem. vol. I chap. V. part 2d, section 1st.

3. It is impossible to mention this faculty, whether called sensation or perception, perceiving testimony or evidence, without an expression of gratitude that we are thus indulged by HIM whose gifts are *truth,* with powers of perceiving it, and who consequently does not, cannot, give that which is *fallacious.* And every man that has the least claim to rationality would judge that he that was inclined to carry scepticism to such a length as to disbelieve the testimony, the evidence, of his own senses, was of all men the veriest of fools. Scepticism by trying to prove or disprove, has proved or disproved too much; since in reason's eye, or in the eye of any thing that has sense or reason, it has destroyed itself. It may exist, but *its fate is sealed.* It has existed long enough to give proof to the world, to what a length, men, by beginning to doubt the most rational evidence, may ultimately go; into what a miserable chaos of mental wretchedness they may finally sink.

4. "The Cartesian Philosophy is to be considered as the ground-work of modern scepticism. The source of LOCKE'S reasoning against the separate existence of the secondary qualities of matter; of BERKELEY'S reasoning *against the existence of a material world;* and of HUME'S reasoning *against the existence of both soul and body;* may be found in the first

part of the Principia of DESCARTES. Yet nothing seems to have been further from the intention of this ingenious philosopher, than to give countenance to irreligion or licentiousness. He begins with doubting; (*even the testimony of his own senses,*) but it is with a view to arrive at conviction: his successors, the further they advance, become more and more sceptical; and at length the reader is told, to his infinite pleasure and emolument, that *the understanding*, acting alone, *does entirely subvert itself*, and *leaves not the lowest degree of evidence in any proposition!!* The first thing a philosopher ought to do, according to DESCARTES, is to divest himself of all prejudices, and all his former opinions; to reject the evidence of sense, of intuition, and of mathematic demonstration; to suppose that there is no God, nor heaven, nor earth; and that man has neither hands, nor feet, nor body; in a word, he is to doubt of every thing of which it is possible to doubt, and to be persuaded that every thing is false, which can possibly be conceived to be doubtful. DESCARTES begins with universal doubt, that in the end he may arrive at conviction: HUME begins with hypothesis, and ends with *universal doubt.*" Beattie's Essay on Truth, part I, chap. II, section 1.

5. *Descartes*, *Malebranche*, *Hume* and *Berkeley*, call into question the *evidences of their own senses.* "By Berkeley we are taught, that external objects, (that is, the things we take for external objects,) are nothing but ideas in our minds: in other words, that they are in every respect different from what they appear to be. This candle, it seems, has not one of the qualities it appears to have: it is not white, nor luminous, nor round, nor divisible, nor extended; for to an idea of the mind, not one of these qualities can possibly belong. How then shall I know what it really is? From what it seems to be I can conclude nothing; no more than a blind man by handling a bit of black wax, can judge of the color of snow, or the visible appearance of the starry heavens. The candle may be an Egyptian pyramid, the king of Prussia, a mad-dog, or nothing at all: it may be the island of Madagascar, Saturn's ring, or one of the Pleiades, for any thing I know, or can ever know to the contrary."

Descartes, *Locke* and *Berkeley*, suppose, that what we call *a body* is nothing but a colleclion of qualities; and these they divide into *primary* and *secondary*. Of the former kind are magnitude, extension, solidity, &c., which *Locke* and the *Cartesians* allow to belong to bodies at all times, whether perceived or not. Of the latter kind are the *heat*

of fire, the *smell* of a rose, or the *taste* of sugar, &c., and these by the same authors, and by Berkeley, are qualities which are said to exist not in the bodies themselves, but only in the mind that perceives them: an error into which they are led by supposing, that the words *heat, taste, smell,* &c. signify nothing but a perception; whereas we have formerly shewn, that they also signify external things. *Berkeley,* following the hints which he found in *Descartes, Malebranche* and *Locke,* has applied the same mode of reasoning to prove, that primary as well as secondary qualities, have no external existence, and consequently that body, (which consists of these two classes of quality and nothing else) *exists only as an idea in the mind that perceives it, and exists no longer than it is perceived!"—Beattie.*

6. Here then by the wonderful sagacity of a Dr. Berkeley it is discovered, that there is no such thing as matter, and as for the senses, they are the organs of lies and deception; therefore all testimony or evidence is now, and for ever, out of the question. But all the ingenuity, if such it be, of Descartes, Malebranche, Hume and Berkeley, has never yet persuaded any man to run his head against a post, or to prefer stepping into a coal-pit rather than believing his own senses. Men generally choose to leave this sort of experiment to Dr. Berkeley, or to any disposed to believe him; to lay their hand on a red hot coal, if they like, and then to say, whether they view the red hot coal, their burnt fingers, or writhe with the agony of pain, "I cannot tell what that is, it may be a pine-apple, a strawberry, a lump of ice, the North Pole itself, the Great Mogul, the Cham of Tartary, or one of Jupiter's moons, for aught I know, or ever can know to the contrary."

7. Oh, the beauty of scepticism! What have we? Glories yet undiscovered; the excellency of not believing our own senses; of denying evidence of every kind! Thus by the admirable aid of a Dr. Berkeley we discover that there is *no such thing as matter,* and by the philosophic powers of a Dr. Priestley,* we learn that there is *no such thing as soul or spirit!!* Consequently the grand discovery is, THAT THERE IS NOTHING; neither body nor soul; neither matter nor spirit; and that *all that is, is nothing; except a parcel of lying senses, that serve no other purpose than to testify that nothing is something.* Here is the glory of scepticism!!! O ye men, that have from the foundation of the world, be-

* See answer to Dr. Priestley on Materialism, by Rev. J. Benson.

lieved that there is such a thing as a sun that shines, a moon that gives light; that there are such things as grassy meads, or verdant lawns, or meandering rills, for near six thousand years have ye been in error, but never believe such things again, but reject them as non-entities in common with those of poetic fiction, or the legendary tales of the Arabian Nights; but to know *any thing* or *something*, whether all is *nothing* or not, go to the sceptics, for wisdom only dwells with them; and when they are gone, there will be, of course, nothing at all.

8. Whether this digression, occasioned by a consideration of the possibility of deranged minds disbelieving the testimony of the most simple and plain faculties of perceiving evidence, those which even an infant, and the common sense of children believe, be excusable or not, we leave to others, according to their inclination, to decide. The apology we offer is by resuming the subject of this article, or by proceeding to say, that *consciousness* is defined to be, that faculty by which we notice the various operations of our own mind, or of its modes of existence. Consequently, consciousness is immediately concerned with internal objects, or operations purely mental; or that by which we know, or are conscious that we think, form an idea of any one thing, material or immaterial, compare two, or reason from three, or feel the emotions of desire, aversion, fear, hatred, love, joy, &c., therefore consciousness is analogous to perception; by the latter we know that we see, taste, feel, &c.; and by the former, we know that we think, form an idea of an object, judge, reason, remember, desire, fear, love, &c. Dr. Reid says, "*Reflection* ought to be distinguished from consciousness, with which it is too often confounded, even by Mr. Locke. All men are *conscious* of the operations of their own minds, but there are few who *reflect* on them, or make them the object of their thought. Though the mind is conscious of its operations, it does not *attend* to them; its attention is turned solely to the external objects, about which those operations are employed. Attention to things external is properly called *observation*, and attention to the subjects of our consciousness, *reflection*." As reflection is defined by Dr. Reid, to be "attention to the subjects of our consciousness," Dr. Hedge considers these terms, reflection and consciousness, but different names for the same thing, without denying that reflection is used to express a more voluntary and intense attention to the subjects of consciousness, or to the phenomena of mind.

9. *Conception* is that power which enables us to form an

idea of an absent object. Shakspeare calls this power *the mind's eye;* as,

> *Hamlet.* My father! Methinks I see my father!
> *Horatio.* Where, my lord?
> *Hamlet.* In *my mind's eye,* Horatio.

Imagination is distinguished from conception as a whole from a part. By variously modifying our conceptions, or by combining the parts of different conceptions together, we can form new wholes of our own creative fancy. Imagination, therefore, is the power that gives birth to the productions of the poet and the painter.

> "The poet's eye, in a fine phrenzy rolling,
> Glances from heaven to earth, from earth to heaven,
> And as IMAGINATION bodies forth
> The forms of things unseen, *gives to airy nothing*
> *A local habitation and a name."—Shakspeare.*

It is not uncommon to use the word imagination and its verb to imagine, somewhat extensively: thus we may say, that we *imagine* that we *see* a whole scene, containing many objects; as the beautiful vale of Tempe: we *imagine* that we *hear* the melody of the softest strain, or the harmony of the full choir: that we are *feeling* the cooling zephyrs of the favonian breeze: we may *imagine* that we are *tasting* the sweetness of the grape: that we *smell* the aromatic fragrance of the "citron grove:" we may *imagine,* with Thompson, that we are *quenching our thirst* with the "cocoa's milky bowl;" that we are *satisfying our hunger* with the "ambrosial fruit of the spicy Anana:" or that we *enjoy* the whole at once, on some favored spot of Eutopia, a country we never knew, or where we never experienced sensations of any kind.

10. *Attention* is the faculty which detains for our examination ideas or perceptions in the mind, and exclude other objects that solicit its notice. The distinctness of our ideas, the accuracy of our judgments, and consequently of our reasoning, and the retentiveness of our memory, very much depend on the exertion of our attention. The reason why we commit things to memory more easily at one time than another, is that we command our attention more perfectly. Dr. Reid observes, "that if there be any thing that can be called *genius,* in matters of mere judgment and reasoning, it seems to consist chiefly in being able to give that attention to the subject which keeps it steadily in mind, till we can survey it accurately on all sides. There is a talent of imagination which bounds from heaven to earth, and from earth to heaven in a moment. This may be favorable to wit and imagery;

but the powers of judging and reasoning depend chiefly on keeping the mind to a clear and steady view of the subject."

11. By the ASSOCIATION of ideas, is understood that tendency which one thought, affection, or even remembrance, has to introduce another. That one thought is often suggested by another; and that the sight of an external object often recalls former occurrences, places or persons, and revives former feelings, are facts known to all. "The view of the spot where we passed the first years of life will, after a long absence, recall many interesting events of childhood. The first notes of a familiar tune being sounded, will cause the remaining ones to pass through the mind in regular order. No principle of our nature is productive of more important effects than this; which establishes a connection between our ideas, feelings, and mental operations. It is, too, the source of numerous errors and prejudices. It is the foundation of all our local attachments, and most of our prepossessions in behalf of the government, and the institutions of our country. It is to the principle of association that we are to attribute our predilections for the modes of dress, habits, and behaviour of those whom we esteem and respect."—*Hedge.*

12. *Memory* is the faculty by which the mind has a knowledge of what it had formerly perceived, felt or thought. The object of memory being something that is *past*, and the object of perception or consciousness something which is *present; what now is*, cannot be an object of memory; neither can *that which is past and gone* be an object of perception or consciousness. "Memory is always accompanied with the BELIEF of what we *remember*, as perception is accompanied with the BELIEF of that which we *perceive*, and consciousness with the BELIEF of that whereof we are *conscious*. This belief which we have from distinct memory, we account *real knowledge*, no less certain than if it were grounded on demonstration; no man in his senses calls it in question, nor will he hear any argument against it. We are so constituted as to admit it of itself, immediately and incontestibly. The testimony of witnesses, in causes of life and death, depends upon it, and all the knowledge mankind have of past events is built on this foundation.

13. *Comparing* refers to that act by which we derive *evidence*, as to the equality, similarity, agreement, suitableness, &c. of any two ideas or terms; thus, *that road is shorter than this; this polyanthus is unlike that; one point in the circumference of a circle cannot be further distant from the centre than another; that book is suitable for*

John; are propositions which express this act, which logically is called *judgment.* By it too, we compare a subject with existence or non-existence, or with its attribute mode or quality; or an agent with its act; or a being with what is acted on it; as *a centaur does not exist—Troy was, but Troy is not; Crœsus was rich—Cæsar crossed the Rubicon—The Augean stables were swept by Hercules.* In this sense each of such relative words or terms, as the following, imply a whole proposition; as *father, cousin, master, servant, Virginian, largeness, smallness, superiority,* &c.; and if expanded would amount to such propositions as *A is the father of B; Jane is cousin to Mary; C is master to D; that man is a Virginian; the spices of Arabia are superior;* i. e. such terms as largeness, smallness, superiority, &c. imply a comparison with some other thing.

14. *Abstraction* is a process of the mind frequently necessary to obtain evidence, by which we divest an idea either of any mistake or prejudice with which it was encumbered, in order to obtain a clear and unbiassed view of it. Thus a young student in mathematics reading such terms as axiom, postulatum, problem, theorem, &c. may be, for a time, in some doubt, if the word axiom is ever taken for a postulatum, problem, &c. or vice versa; by investigation he abstracts from his idea of axiom, every thing belonging to postulatum, problem, &c. which he had through mistake attached to it, and thus obtains the clear idea, that an *axiom is a self-evident truth,* and that it should be understood for nothing less or more, whether maxim, precept, or any thing else. And if all men by abstraction, could, with equal facility divest themselves of all mistaken views or prejudices, relative to adventitious circumstances not essential, they would obtain a clear and just idea of the being or character, without which evidence is out of the question, and their judgment must remain incorrect.

But there is another process of abstraction, by which we either classify or arrange, the individuals of being, whether belonging to the *vegetable, animal* or *mineral* kingdoms; or to the *varied products of mind, of Literature and of the arts;* whether considered in books of all kinds, and on all subjects; in manuscripts, paintings, statues, busts, cabinets, coins or numismatics, models and patents; *or to being generally,* whether visible or invisible, material or immaterial, (as in the science of Ontology,) into ORDERS, TRIBES, GENERA, SPECIES, VARIETIES, not only for the purpose of establishing universal terms affording ideas of a universal nature, distinct

from any other universal nature, but in each department, in each kingdom, to form one system, which is ONE SCIENCE, and therefore important for the purpose of *acquiring and retaining evidence*, since science and evidence are correlative terms; or we may consider, by abstraction, a TRIBE and the properties common to it, as distinct from its ORDER; a GENUS distinct from its tribe; a SPECIES from its genus; a VARIETY from its species; or an INDIVIDUAL from its variety; but all further division after this, becomes *analysis*.

Generalization, effected by abstraction, affords systems, and each is not only a system of truth, but a system of general terms, with their definitions; and it is not only a great help to the memory, but facilitates very much the definition of the order, tribe, genus, species, or variety, i. e. of predicable terms or of a term that may be predicated of any tribe that falls under the order, of genus that falls under the tribe, of species under the genus, of variety under its species, or of individual under its variety. The effect of such a systematical arrangement of the productions of nature, is seen in our various systems of Natural History, as of Zoology,* Ornithology,† Ichthyology,‡ Entomology,§ Conchology,‖ Botany,¶ Mineralogy,** and Geology;†† and also of Chemistry, Pharmacy,‡‡ Nosology,§§ Therapeutics,‖‖ and Bibliography;¶¶ in which a species is accurately defined in a line or two, which without this systematical arragement, could scarcely be defined in a page.

By some, generalization seems to be considered as a distinct process from abstraction; but the fact is, that whether we reduce a genus to a species, or generalize a species into its genus, both are done by abstraction, i. e. in either case by *taking off* properties to admit the one to be the other. As there has been some misunderstanding on this topic, it will be proper here to give the following illustration. Let it be required, in the first place, to generalize the species, bird, into its genus, animal.

Comprehension.	Extension.		Comprehension.	Extension.
Life,	Ostrich,			
Sense,	Eagle,		Life,	Man,
Motion,	Swan,	All birds are animals.	Sense,	Beast,
having	Raven,		Motion,	Bird,
Wings,	Parrot,			Fish,
Feathers,	Linnet,			Insect.
Oviparous,	Sparrow,			
	&c.			

* The science which treats of living creatures; † of birds; ‡ of fishes; § of insects; ‖ of shells; ¶ of plants; ** of minerals; †† of the earth and its com-

To generalize the species, bird, into its genus, animal, it is only necessary, as appears by the above example, *to take off, by abstraction*, the properties constituting its essential difference, found under brackets in the column of comprehension on the left of the species birds.

Then let it be required, to reduce the generic term *animal* to the special one, *bird*.

Comprehension.	Extension.
Life, Sense, Motion, having wings, feathers, Oviparous,	Ostrich, Eagle, Swan, Raven, Parrot, Linnet, Sparrow, &c.

All birds are animals.

Comprehension.	Extension.
Life, Sense, Motion,	Man, Beast, BIRD, Fish, Insect.

And to specialize, or reduce the genus animal to its species bird, it is only necessary, as appears by the above example, to *take off* again, *by abstraction*, such parts of its extension, found under brackets in the right hand column, as do not agree with bird; i. e. neither man, nor beast, nor fish, nor insect is a bird; the rest of animal is a bird.

Therefore, to generalize a species into its genus, you *take off*, by abstraction, that part of its comprehension that constitutes its essential difference, but no part of its extension, since they are all animals.

And to reduce a genus to a species, you *take off*, by abstraction, such parts of its extension as do not agree with the species, but no part of its comprehension which is common to all.

But how in chemistry would abstraction or generalization differ from analysis? Take for example the proposition,

A nitrate is a neutral salt.

The comprehension of a nitrate, is 1st, composed of an acid and a base, and 2d, its essential difference, composed of the nitric acid and a base; its extension is, the nitrate of potassa, the nitrate of soda, the nitrate of ammonia, nitrate of lime, nitrate of silver, &c.

The comprehension of neutral salt, the predicate is, having

ponent parts; ‡‡ the art of preparing medicines; §§ the classification of diseases; ‖‖ the art of healing; ¶¶ see excellent plans for the arrangement of books and of large libraries in the supplemental volume of Dr. A. Clarke's Bibliography, 8 vol. 8vo.

properties distinct from either of its component parts: its extension is, nitrates, sulphates, chlorates, acetates, &c.

Now the species, a nitrate, is generalized into its genus, a neutral salt, by taking off, or abstracting its essential difference, a part of its comprehension, viz. composed of the nitric acid and a base: this taken away, we have its generic character, "a neutral salt."

Or to reduce a "neutral salt" to its species, "nitrate," we take off, or abstract such parts of its extension, viz. sulphates, chlorates, acetates, &c., as do not agree with the species, "nitrate."

But still, here is no analysis. To effect this, therefore, we must have some individual nitrate, say the nitrate of ammonia, and decompose it into its two component parts, viz. the nitric acid and ammonia, which process is not implied by either abstraction or generalization.

13. *Analysis* is another important process by which *evidence* is obtained. It is that by which the whole of any individual of a species is taken to pieces, in order to view some particular part considered separately, or to have a more correct perception relative to the composition of the whole. It is by this that a mineral or an ore is examined, to determine if it contain any metal or other valuable substance, by divesting the compound of its unnecessary parts. Thus MORPHIA is found to be the narcotic principle in the larger mass *opium;* and consequently that more of the energy of this drug may be exhibited in less volume. In the same way, QUININE is found to be the active part of cinchona, or the *Peruvian bark. By this mode of obtaining evidence,* some of the most luminous and useful discoveries have been made in the sciences. Thus it is found that the base of every tree, of every vegetable, is a metal!* that there is metal in every piece of soap; *and that fire may be lighted with water !!*

* A whole tree may be thus analyzed; not as the botanist would do to suit his purpose. The whole tree, roots, leaves and all, may be burnt to ashes; the ashes may be washed, and the washings when drained off are a weak solution of the carbonate of potassa. The unnecessary quantity of water is driven off by rapid evaporation, or boiling, (a part of the analysis) until what remains is strong enough to crystallize, when the carbonate of potassa appears, a white salt, commonly called potash, as found in the shops. It is now requisite to divest this of the carbonic acid, which constitutes a carbonate. Lime has a stronger affinity for that acid than potassa in combination with it. Quick lime, i. e. lime deprived of its own carbonic acid, is therefore mixed with a heated solution of the carbonate of potassa. The lime seizes the carbonic acid of potassa, and therefore potassa being set free, is precipitated to the bottom of the vessel, and obtained in its solid state, potassa, by evaporation. Potassa is a

By this faculty of obtaining evidence, a whole subject or book may be analyzed; its several parts distinctly contemplated, their mutual coherency perceived, and the relevancy or irrelevancy of its parts to the chief point, evinced or exposed, as the case may require. Thus an argument, whether it occupy an hour or two, or three in the delivery, or whether expanded over a page, a chapter or a volume, may be taken to pieces, and it may be shown, if the parts are such as to admit of ever being put together again; or whether sound has not been substituted for sense; wit, plausibility and rhetoric for argumentation, and as a counterfeit passed off amongst the unthinking. This process, in such case, would constitute sound criticism, to which all its canons relative to taste, fancy and imagination would be, comparatively, of inferior and secondary importance.

The contemplation of character, frequently is a matter of no small importance to our moral conduct and happiness. But character is often a complex consideration, that requires being divested of every thing which is temporary or casual in its duration, accidental as to circumstances, and not a native or essential feature in the delineation. Thus the recollection that it was the solicitude of Martha to make in a proper manner the requisite preparations, that encumbered her with care at a very interesting moment, is sufficient to intimate that she was by no means destitute of respect and love for the guest she entertained.

14 It does not appear to be generally thought that the PASSIONS have any thing to do with perceiving any evidence we receive. Neither is it supposed that perception is any organ of sensation; consciousness the act itself of thinking, remembering or reasoning; nor memory or reflection, the idea itself

strong oxide of potassium, and requires a strong agent, as the galvanic battery, to drive off the oxygen which renders the metal yet an oxide. The oxygen, now flies off at the positive pole, and the pure metal, potassium, is obtained at the negative pole of the battery. Here is a metal obtained by analysis out of a tree, and thus we have the evidence of the convertibility of vegetable matter into metal. We view it as a simple, incomplex idea, a simple body, incapable by any art known of further decomposition; almost giving presumptive proof that all matter originally was metallic, and that even our nine earths are metallic oxides, since several of them already have been reduced to their primitive metals. When tired of viewing the metal we have obtained, we throw it into a saucer of cold water. In a moment there is a fire! The metal, size and shape of a pea, is running, whilst on fire, all over the water, as if greedy of the oxygen the water contains to reconvert itself into an oxide, or potassa, as it was before it became potassium. *Here, by analysis, we have evidence that the base of vegetable matter is metallic, and that water can light a fire!*

to which by that reflex act we refer. When we perceive, are conscious, remember or reflect, it is on an idea or emotion presented by sensation, thought, reasoning, &c. either at the same time or before, as the case may be; and according to the greater or less energy in that perception, consciousness, remembrance or reflection do we retain that idea, or that evidence, for a greater or a less time. Thus it appears that perception, consciousness, remembrance and reflection are merely powers that are acting according to ideas given by other powers either before or at the same time; and therefore before they act, or at the same time they act, there exists furniture in the mind given by other means. This, at all events, brings the passions very near to an identity with other powers already specified. Without undertaking to decide this, however, but leaving it at present problematical, we shall merely proceed to inquire, what is a passion, or what must exist in the mind at the time when the energy implied by that passion is in operation? A slight reflection on the subject will convince us, that two ideas, at least, or the ideas of two terms, simple or complex, by whatever means obtained, must exist in the mind, whenever a passion is felt. There is the object of that passion, whether money, wealth, pleasure or pain, accommodation or annoyance, which becomes the subject of the mental proposition. The other idea is the predicate of that proposition, which, however ordinarily expressed by the epithets, "desirable," "beautiful," "lovely," or by "ugly," "unpleasant," "odious," "wretched," "dreadful," &c. may be comprised in two words, viz: *suitableness* or *unsuitableness;* i. e. suitable to me, to you, or to another; or unsuitable to me, to you or to some one contemplated, as the case may be; "suitable to me" or "unsuitable to me" is the predicate, which is considered one term: the propositions then stand thus.

1 2
That object is suitable to me.

1 2
That object is unsuitable to me.

Now if these two ideas, viz: the *object* which is perceived *suitable to me*, is not in possession, it is DESIRED; if its ultimate attainment be a matter of probability, I HOPE for it; if it be possessed, its worth and value, duly appreciated, I REJOICE in it.

But if we take the other propositions, viz:

1 2
That object is unsuitable to me,

and if the *object* which is perceived to be *unsuitable to me*, be at a distance, I am AVERSE to it; if likely to occur, I FEAR it; if inflicted, I GRIEVE; if on another, I am SORRY; if inflicted injuriously by another on me, the object of the passion is transferred to another, the offender, and I am ANGRY.

These remarks are made merely to show that there cannot be less than two ideas or one proposition, in the mind, whenever a passion is exerted. But the modifications of both the subject, as at a distance, probable or expected, in possession or suffered; and of the predicate, how or for what particular reasons, or on how many accounts suitable or unsuitable, imply that although not less than two ideas or one proposition can constitute the basis of a passion, yet on it many more propositions and consequently ideas may be built, not only on account of the modifications just specified, but on account of the usual great activity of the thoughts during such emotions, when propositions, ideas and relative views may pass in the mind with inconceivable rapidity.

Though it is not contended that the passions imply the original powers by which we receive evidence, yet they often prove powerful means not only of enabling us to obtain a stronger view of the evidence given by other instruments, but of retaining it, in consequence of that strength, longer in the mind than we otherwise should have done.

We are well aware that many are prepared to say, that if the passions can be considered either as means of receiving evidence, or as the channel through which it should, for a moment, be permitted to flow, that at all events, they are often very dangerous powers in connection with evidence, or that any evidence, which may have been unfortunate enough to get into such bad company, can at best be, only an object of suspicion. We cannot see it, however, any more necessary, that because any part of a man has been in a diseased state, it should remain always so, or not made equally sound with any other part, when healthy and correct action will be the necessary consequence, any more than we can see it necessary that a living man should always be chained to a dead man. We do not see any valid reason why we should stand aloof, or in a state of alarm, at any of the faculties an unerring Creator hath given us; especially since their restoration to healthy action is a declared possibility. If however we doubt this, or prefer, by habit, or wrong objects to keep the passions perverted, we only fall under that rule, which applies generally to

every power, "If the light that is in thee be darkness, how great is that darkness!"*

We are not contending for the use of a blind eye, a deaf ear, or of a perverted passion, but for the healing of all, or of any of them, if they be diseased; and can it be supposed, that they will not act, if they be healed, or that the action of any of them, in that state, will be worthless? The passions when healed are noble endowments; paint an idea, in colors of clearest evidence, according to the dimensions of the full length portrait; constitute the bond and amenities of social life, and are parents of all the acts that make man amiable to man.

It is only for the passions in their healthy or correct state that we contend, not as being the original powers by which evidence is received, but as the most vivid energies by which it is impressed and retained. Where is there a stronger passion than the love of God? which we are told by testimony, and it has been proved by experience, that nothing except sin can conquer, not even death itself, and in it is *evidence* of the strongest character: for can a man love what he does not know!! And within this genus, and in no other, is comprised the species, the power of "loving our neighbor as ourselves:" therefore, without these two, mere civilization, ethics, &c. however excellent when in possession of consistent and *vital* energies, are nothing but the picture of a fire that cannot warm; or are things that exist merely to contradict themselves.

15. We have now reviewed the several powers enumerated by writers on Mental Philosophy, that are, more or less, or in one way or the other, the means through which we receive *evidence*, or retain that which we possess. But how are we allowed by them, would we speak according to the common dialect of ordinary conversation, to express these faculties, as they are in combination with the varied circumstances of life? since an idea may be of an object that is *present*, *distant*, or *fancied*, *external* or *internal*, *past*, *abstract*, *something immaterial yet known to exist*, or *what is charged on us as worthy of observation?*

16. For example, I am told, that the moon will rise this evening at 9 o'clock, eclipsed; i. e. *an object not now apparent to sense;* I *conceive* an idea of it: so of a *distant* or *fancied* object, as an Egyptian pyramid, a centaur, or a flying horse. I am allowed to say, I *conceive* an idea of such things; as, I can *conceive* an idea of old Troy that now no

* Matt. vi. 23.

one sees; of Briareus with his hundred hands; of Argus with his hundred eyes; or of Polyphemus with only one, yet large as a Grecian shield, and whose head touched the clouds. But 9 o'clock has come; this moment the moon rises eclipsed. I *perceive* it; before, of course, I *conceived* it, or an idea of it. Or, I am told of something that did occur, the comet for example, of 1811; I *remember* it: it is true, once, I *perceived* it. But I have occasion to observe not what is external, but something *within*, it may be a thought, what I fancy or imagine, some emotion of the mind, as desire, hope, love, joy, &c.; I am *conscious* of it; or, it may be purely abstract, what I never saw, yet I know it exists; it may be virtue, justice, or mercy, space, motion, extension, spirit, duration, &c.; here I am allowed to say I *form an idea* of it, or I am *conscious* that I am thinking of it—(thus far the ignorance of certain metaphysicians would go,)—or an object, it may be a continued subject, is charged on me as something worthy of observation; I *attend* to it. Perhaps we are going too fast, for we may have two ideas instead of one; then we are *comparing* them; which logicians call judgment, without making any concessions to metaphysicians, or varying their general terms to suit the purposes of common conversation, any more than chemists can alter the nomenclature of Lavoisier and Fourcroy, to suit those who will never study chemistry. But we are not engaged, perhaps, with any thing within the reach of intuitive evidence. We may be reflecting on *nature*, and wonder what it is. On investigation, we discover that its acts are regular, and properly directed to some wise and good end, with no deviations except what are referrible to principles comprehended within, what is consistent with itself, as if the whole were one system of unique rules uniformly tending to some apparently beneficent purpose. We are conscious that this either is LAW, or we never had an idea what law is. And as for law without mind, something intelligent to form and direct that law, especially when directed to wise and salutary purposes, we immediately perceive to be absurd, the admission of which is utterly incompatible with rationality; we therefore arrive at the conviction that *law is the expression of mind;* and as we before had discovered that *nature is law*, we are then prepared to reason thus—

Law is the expression of mind.
Nature is law; therefore
Nature is the expression of mind.

This is the act of reasoning, or the expression of it; and by it we obtain deductive evidence, viz. that "*nature is the expression of mind.*" We may now use this principle, obtained by reasoning, and establish it as a principle of deductive evidence, to find, to search after some other truth, viz. *nature is the expression of mind!* What mind? Where is that mind; or rather where is it not? since nature, its expression, is, in its operations, beheld here, there, every where—to-day, yesterday, one hundred, as well as a thousand years ago, working, proceeding by uniform laws productive of wise and beneficent design: in vegetables, in animals, in minerals, in matter, as well as in the animated man; on the surface, beneath it, on the dry land, in the waters, the mighty oceans, in the skies, the heavens; all move by regular laws, towards consistent design, as if guided by some ineffable, matchless wisdom, power and goodness; i. e. mind! But where is that mind? It is working here, there, elsewhere and every where to-day and yesterday, the same; then that mind is here! is there! is every where! And what impedes my faculties of perceiving evidence, that I have not become acquainted with that mind!! It made me; not for a vain, a temporary, or an unworthy purpose, but for something consistent with infinite beneficence, in the consummation of which is the very fruition of my being!! Have I then fully appreciated that? or do I recollect that I, a free agent, not a machine impelled by necessity, may thwart that, by rules mine, not his? These though enthymemes expressed interrogatively, are reducible to syllogisms, from each of which, when proved, we should derive some new *deductive evidence* which again might be taken as a premiss, the minor or the major of another, as far as necessary.

17. It is, indeed, sufficiently clear that the several faculties of perceiving evidence, whether intuitive or deductive, however modified by circumstances, are reducible to what logicians have agreed to express by APPREHENSION, JUDGMENT, and ARGUMENTATION. Whether we *conceive, imagine, perceive, remember,* or are *conscious* of an idea, or *attend* to it, we, in logical language, APPREHEND it; if we are engaged in the *comparison* of two, we are, in the logical sense, engaged in that act of JUDGMENT, which forms a proposition: or if we are engaged with three ideas, as in the preceding example, nature, law, mind, we are engaged with reasoning, more correctly termed ARGUMENTATION. All sciences have their technicalities, without which, indeed, no science would be intelli-

gible; and APPREHENSION, JUDGMENT, and ARGUMENTATION are the names logicians have agreed to employ to express *the faculties of perceiving evidence,* whether intuitive or deductive; i. e. APPREHENSION, the power of apprehending one idea or term, whether it be of an object external, present, distant, fancied, past, or internal; JUDGMENT, the faculty of perceiving evidence from the mental juxta-position or comparison of two ideas or terms; and ARGUMENTATION, the power of deriving deductive evidence by reasoning from three ideas or terms. These three expressions are sufficient, without regarding distinctions which belong to metaphysics and common conversation. A certain salt of a slight green colour, in ordinary language, is called copperas. The chemist calls it the sulphate of iron, knowing that not one particle of copper is in the mass. Thus the dialect of common discourse is often one thing, whilst that of science is, and must remain, another.

(Art. 109.) ASSENT is a persuasion of the probability of testimony, and is more or less strong, according as that *testimony* rises to *evidence,* when *assent* amounts to *conviction.*

(Art. 110.) CONVICTION is the conscious perception of EVIDENCE, by faculties capable and willing to receive it.

1. The following remarks, with slight alteration, are extracted from Mr. Wesley's Logic; q. v.

2. That is an *evident* proposition, which extorts *conviction,* as soon as it is *understood:* as, *the whole is greater than its part.* That is a *doubtful* one, in which we know not how to determine; as, *the stars influence men.*

3. If any thing occur, whereby the mind inclines to either side, that which was doubtful before, becomes *probable.* Such an assent is termed *opinion.*

4. OPINION, therefore, respects a barely *probable* proposition, and implies *no certainty* at all. Yet there are several degrees, whereby it approaches towards certainty; and the highest degree of probability, is not far distant from it.

5. CERTAINTY is two-fold, 1st. that of the *object,* the thing to be perceived; and 2d, that of the *subject,* the understanding which perceives it; and both have their degrees. That is *more certain,* in the former sense, to which there is the *less objection;* that in the latter sense, to which the less objection *appears.*

6. We might enumerate many kinds of *evidence.* But it

may suffice to observe, it is either, 1. that of a self-evident axiom; (i. e. intuitive evidence;) or 2. that of a conclusion *regularly* deduced from propositions of intuitive or deductive evidence. This logicians term *science;* which accordingly they define—"A conviction of certain and evident conclusions, regularly deduced from certain and evident premises." The certainty and evidence here implied are that both of the object and of the subject. For by the former, science is distinguished from *error;* by the latter from *opinion.* Without the evidence of the subject, there can be no *science:* and this without the other, is as *the existence of positive light in the presence of the blind.*

7. We need not prove that there is such a thing as certainty: seeing all *reasonable* men allow it. We freely assent to what is affirmed by a wise man: and more freely, if he confirm it by reason. Some things we are taught by nature itself; and some by Divine revelation, and of all these we have sufficient certainty.

8. To *assent* to testimony is the same as to *believe;* and such an assent is termed *faith; Divine* faith depends on the testimony of God; *Human* faith on the testimony of man. What nature dictates we may be said to *perceive,* what reason teaches us, to *know.*

9. God can neither deceive, nor be deceived; men are often deceived, and often deceive. Reason and nature lowers. Nothing, therefore, is more firm than *Divine* faith: nothing less so, than *human.* In what we *perceive or know,* there is often no *fear,* always some *danger* of being deceived. Hence, there is the highest rest for the mind in *divine* faith; the lowest of all in *human.* In what we *know* or *perceive,* there are various degress of rest according to the degree of testimony or evidence; probability or certainty.

10. If, therefore, we were to make a sort of scale of assent and conviction, it might consist of the following steps.

1. ASSENT.
   1. HUMAN FAITH; an *assent* to a doubtful proposition.
   2. OPINION; an *assent* to a probable proposition.

2. CONVICTION.
   1. ASSURANCE; or *conviction* of the truth of a certain proposition.
   2. SCIENCE; or *conviction* of the truth of a certain and evident conclusion.
   3. INTELLIGENCE, or *conviction* of the necessary truth of a self-evident axiom.
   4. DIVINE FAITH; or *conviction* of the truth of Divine Revelation, or of the *necessary veracity of truth testifying of itself.*

11. To each of these there belong certain principles, which are peculiarly proper to produce it. The *principles of Divine Faith* are those, and those only, which are contained in the Scriptures. Of *intelligence*, those which are properly termed axioms: of *science* the conclusions regularly deduced from them.

12. An AXIOM is a proposition which needs not, and cannot be proved. This is a subject of INTUITIVE EVIDENCE. Such are the following.

From NATURAL DIVINITY. 1. *God cannot deceive, nor be deceived.* Whence flow these certain and evident conclusions: 2. *Absolute faith is due to the testimony of God:* 3. *Revelation never contradicts either sense or reason. It may indeed* TRANSCEND *both.* But it cannot possibly contradict either, *rightly* employed about its proper object.

From MATHEMATICS. The whole is greater than each of its parts; equal to them all. All right angles are equal to one another. Things which are equal to the same thing are equal to one another.

From METAPHYSICS. *It is impossible for the same thing, at the same time, to be and not to be.* Some affirm this to be the only axiom in the world. Whoever affirmed this, had a miserably narrow and perverted mind.

From LOGIC. Terms which agree in one and the same third, agree with one another.

13. Some suppose, that there are no axioms to be found in the other arts and sciences. But such principles at least, are found therein, as produce assurance, if not science. Such are these. Nothing, which is not a thing, cannot spring from itself, since that is not a thing. Nothing, which is not a thing, can be the cause of itself, since that self is not a thing. That which is not a thing, cannot have any attribute, since an attribute without a subject is impossible and inconceivable. That which is not an agent, (as nothing) cannot act. That which cannot act cannot produce any thing. What you would not have another to do to you, you ought not to do to another.

14. The principles that serve to produce *opinion*, are usually styled maxims. They commonly hold, but not always. To this class those properly belong, which are, as it were, in the middle way, between doubtful and certain.

15. The uncertainty of human faith arises hence. In order to procure a firm assent of this kind, a competent witness must know what he says, and say what he knows; and both be apparent to him that believes it. But this is rarely the case.

Wherefore we have always reason to suspect what we have no other proof of, than human testimony, even when there appears no more reason to doubt thereof, than of a mathematical demonstration.

16. According to these six degrees of assent and conviction, propositions might have been divided with regard to their matter, into *infallible, self-evident, scientific, certain, probable* and *doubtful.* But as the four first of these produce science, and any assent short of this, is indefinitely speaking, termed opinion, they are usually divided only into two classes. 1. That which produces *science;* and this is called *scientific* or *demonstrative,* and often *demonstration.* 2. That which produces *opinion;* (any assent short of science) and is termed, *assumptive;* i. e. arguing probably, or on assumed grounds.

17. There are two species of demonstration. The first demonstrates *that a thing is;* proving either directly that it is so, (*and this is called direct demonstration*) or that if it be not so, some absurdity must inevitably follow. This is called demonstratio ad absurdum. We may properly term it *oblique.*

18. We demonstrate directly, either 1, by proving a thing from its effect, as the sun gives no light; therefore it is eclipsed. Or 2, by proving it from its remote cause, as the moon is diametrically opposite to the sun; therefore it is eclipsed. But we prove this from the earth's being interposed between them; this is

19. The second sort of demonstration, which demonstrates, *why a thing is,* by assigning its *proximate* and *immediate* cause.

20. But there may be a *proximate,* which is not the *prime* cause, that is self-evident, and indemonstrable, whose evidence is therefore prefered before all others, as needing no other light than its own. *The stars are not necessary to show the sun.*

21. There are then four degrees of demonstration: the *oblique* demonstration is good; but the direct is preferable to it. Demonstration by the *proximate* cause is better still; but the *prime cause,* best of all.

(Art. 111.) The consequences of conviction are the practical and moral effects it should produce on rational free-agency.

1. Testimony, evidence, conviction, and even logic itself, are subjects eminently concerned with man. It is impossible

to consider man (exceptions there may be to all general rules) either as inert matter, or as an irrational being. But the degrees within the precincts of rationality are indefinitely great and numerous; and a wide difference exists between mere rationality, or rationality not in action, that is, the mere passive capacity of understanding, and rationality vigorously exerted towards the end for which so high a talent is given. Had all men the mind either of Milton, the creative poet, or of Milton's Adam, when he found himself surrounded by testifiers more numerous than drops of evening dew on the spires of grass, they would perceive that *testifiers* do not exist without *testimony*, and that these several testimonies compose *evidences* as countless as the pages in nature's endless volumes; and the *conviction* of this would be, that *not an inch of space, nor a moment of time existed, without ample proof* not only of their own original, but of the moral consequences of their rational existence, and the pleasing privileges to which they, as free agents, were invited.

2. Is it possible for a man, a man of active intelligence, to be placed in this, or in any similar condition, with all the *conviction* that it is his privilege to enjoy, and conceive that any thing is indifferent, or can he be indifferent to them; whilst all these testimonies, this evidence, the countless pages of nature, the pages of life, the pages of experience, of revelation, of the volumes of science, all testifiers; nay, of the volumes, the bibliothecas of Asia, Europe and America, lay expanded before him? Man, all sense, all intelligence, both active and passive, an agent and a patient, surrounded with evidence co-extensive with space, and co-existent with duration, and yet if not inactive, not active in a right way, is a paradox of the highest order; giving a proof that it would require volumes to unfold, of the high value of *conviction*, and that conviction, of a right kind, is all that is wanting to breathe an atmosphere of beneficence around the world.

3. As testimony, evidence and conviction minister to the happiness of man, so do doubt, uncertainty and scepticism not only to his own individual wretchedness, but tend so far as their influence goes, to the entire demolition of all society and government, and to the destruction of all the more kind and noble feelings, not only between man and his Maker, but between one man and another. Their origin is darkness, their work destruction, and their end chaos. However unhappy it has been to those who have lived only to advocate such a cause, and to disserve mankind, yet in another sense it is for-

tunate; since a standing proof is before the world to what length men may go who, by first rejecting all the sources of evidence, at last can disbelieve their own senses, and deny that they have any testimony or evidence that the snow is white, the grass green; that ice is cold, or the fire hot; and believe, the only thing they must believe, that their own senses, not only of the mind, but of the body, exist only for the purposes of deception.

4. We are not informed of any earlier instance of sceptic lunacy similar to this, than that of Pyrrho, the founder of the Grecian sect of sceptics. According to the testimony of Diogenes Laertius, "Pyrrho, professed to disbelieve his senses, and to be under no apprehension from any of the objects that affected them. The appearance of a precipice or of a wild beast was nothing to Pyrrho; at least he said so; he would not avoid them; he knew they were nothing at all, or at least that they were not what they seemed to be." We do not see that this sect was likely to make many converts, whilst the pleasures and pains of the body are connected with the senses, and men generally are disposed to accept the former and avoid the latter, if they can, whether they acknowledge that they do this through believing that they have senses or not. Men generally, by this one circumstance, have continued to give proof to the world that they believed their senses, including even such rare specimens of insanity as were found in Descartes, Malebranche, Hume, and Berkeley.

5. This comparatively modern scepticism called into successful exercise the pens of Father Buffier, Reid, Butler, Beattie, Campbell, Paley, and Stewart. Father Buffier appears to have been the first that successfully taught the important science of *first truths* in opposition to the career of that scepticism. He finds two great sources from which he derives his first principles; viz: 1. The consciousness we have of our own thoughts. 2. Common sense, or the faculty, as he explains himself, by which men form judgments on the ordinary objects of their experience, which are not proper subjects of consciousness. The principles of common sense, as given by Buffier, may be thus detailed. "1. There are other beings, and other men in the world besides myself." (The statement of this appears to have been necessary, since Descartes refused, until he had first proved, to believe it; i. e. he could not, as to this matter, trust the intuitive evidence of his own senses.) 2. There is in them something that is called truth, wisdom,

and prudence; and this something is not merely arbitrary. 3. There is in me something that I call intelligence or mind; and something which is not that intelligence or mind and which is named body; so that each possesses properties distinct from the other. 4. What is generally said and taught by men in all ages and countries of the world is true. 5. *All men have not combined to deceive and impose on me.* (An axiom certainly, and applicable to a good purpose.) 6. What is not intelligence or mind, cannot produce all the effects of intelligence or mind manifestly existing; neither can a fortuitous jumble of particles of matter form a work of such order, and of such regular motion as a watch. He likewise mentions three tests by which first truths, or *axioms of common sense*, may be distinguished from all others, viz:

1. They are so clear, that they cannot be proved by any thing clearer.*

2. That they have been admitted in all countries, and at all times, with exceedingly few exceptions.

3. They are so strongly imprinted on our minds, that we regulate our conduct by them, in spite of all the speculative refinements of that (pseudo) philosophy, which denies them.†

6. On this subject, Beattie's "Essay on the nature and immutability of truth in opposition to sophistry and scepticism," is worthy of the most attentive perusal. His enumeration of the *sources* of EVIDENCE are as follows:

1. Mathematical evidence.
2. The evidence of external sense.
3. The evidence of consciousness.
4. The evidence of memory.
5. The evidence which we have, when from effects, we infer causes.
6. Probable evidence.
7. The evidence of testimony.

The sixth class Dr. Beattie divides into 1st, the evidence by which we judge of future events by our past experience from similar events; and 2d, the evidence of analogy.

7. INTUITIVE *evidence*, according to Dr. Campbell, is that which is admitted immediately on a bare attention to the

* Aristotle admits, "as true whatever is self-evident, (as well as Euclid,) without seeking to prove it; nay he affirms that those men who attempt to prove self-evident principles, or who think that such principles may be proved, are ignorant of the nature of proof."—Aristot. Metaphys. lib. 4, cap. 4.

† "Traité des premiers Verités, et de la Source des nos Jugemens," par M. Buffier.

ideas under review; and DEDUCTIVE, that which is admitted mediately, by a comparison with other ideas; as,

INTUITIVE EVIDENCE.

1. *Intuitive Evidence.*
- 1. *Mathematical Evidence*, which is the result of pure intellection.
- 2. *Consciousness*; and
- 3. *Common Sense*, or evidence of
  - 1. Sense,
  - 2. Memory.

Deductive evidence founded on the intuitive, is either

2. *Deductive Evidence.*
- 1. What is *founded on* the *axioms* of pure intellection.
- 2. What is *founded on* the dictates of *consciousness and common sense;* or moral or probable evidence
  - 1. The knowledge we derive from *experience.*
  - 2. That from *analogy.*
  - 3. That from *testimony.*
  - 4. From *chances*
    - partly probable,
    - partly certain.

(Art. 112.) EVIDENCE is of two kinds: 1, INTUITIVE, and 2, DEDUCTIVE.

INTERROGATORY EXAMINATION

ON

CHAP. VI.

Q. 1. What has evidence to do with the matter of a proposition? page 121, note 1.

Q. 2. What are the particulars involved in the consideration of evidence? page 123, note 3.

Q. 3. If evidence first proceeds from that which testifies, who, or what are they which testify? Art. 105.

Q. 4. Explain what you mean by testimony. 106.

Q. 5. Does testimony always amount to evidence? See examples under art. 106; as example 4.

Q. 6. On page 123, we read "A killed B, according to the testimony of C;" is the truth of that proposition proved by evidence?

Q. 7. What is evidence? 107.

Q. 8. Does the book written by Euclid on geometry contain evidence? 107, note 1.

Q. 9. Is it evidence to those who never read it? 107, note 1.

Q. 10. Is there less of evidence in that book in consequence of its not being read by any one? 107, note 1.

Q. 11.* Does Paley's work on Natural Theology contain evidence relative to NATURAL RELIGION; and does it contain less evidence on account of its not being read by any one?

Q. 12.* Does the book, called the Bible, contain evidence relative to REVEALED RELIGION; and does it contain less evidence on account of its not being read by any one?

Q. 13. What may be said to be the faculties of perceiving evidence? 108.

Q. 14. By what faculty is it that you form an idea, or the evidence resulting from one term? 108.

Q. 15. By what faculty do you perceive the evidence resulting from two terms? 108.

Q. 16. By what faculty do you deduce the evidence resulting from three terms? 108.

Q. 17. Do apprehension, judgment, and reasoning express the three faculties by which we perceive evidence? 108.

Q. 18. What is assent? 109.

Q. 19. What is conviction? 110.

Q. 20. State what are the consequences that should result from conviction? 111.

Q. 21. How many kinds of evidence are there? 112.

CHAP. VII.

On Intuitive Evidence.

(Art. 113.) INTUITIVE EVIDENCE is that which is sufficient to produce IMMEDIATE conviction or certainty, without the necessity of reasoning.

1. Intuitive evidence is of four kinds; viz:
   1. That of sensation, or perception,
   2. That of consciousness,
   3. That of memory,
   4. That of axioms, or of self-evident truths.
2. Intuitive evidence is that which we have of any truth,

* These questions may be omitted to any, if such there can be, who have not read these books.

or fact, which appears at once, through sensation, perception, consciousness, memory, or axioms, so self-evident, that it cannot be made more clear, nor can require demonstration; and its own light and clearness evinces *the want of understanding* in any one *attempting to make plainer that which cannot be made more plain.*

3. For example: "I see the sun;" now how is the mathematician to demonstrate this, or how am I to demonstrate it mathematically, or by any species of reasoning whatever. If there be such a thing as truth, or truth can speak by me, I can express my conviction of that evidence, by a *sentence* of *affirmation* or *negation*, without any act of comparing or reasoning, or without any need of Euclid or Algebra.

4. Yet mathematicians (so called,) exist, who say, that they will believe nothing they cannot demonstrate, as if the lightning that glances now out of the corner of that cloud, cannot without demonstration, be allowed to exist, either in itself, or its image in my eye. Mathematicians, that talk in this, or in any similar way, however mathematically *sane* they may be, are certainly, if not intellectually and morally *insane*, at least troubled with a *monomania.*

5. "I will believe nothing," said a young sceptic riding with a gentleman in a coach in England, "that I cannot demonstrate." "Do I understand you rightly, sir," said his companion, "that you will believe nothing that you cannot understand and demonstrate?" "Yes." "Now, sir, will you tell me what is that?" "A cow." "What has it on its back?" "Hair." "Of what color." "Red." "And what is that?" "A sheep." "With what is it covered?" "Wool." "Of what color?" "White." "Do you believe so." "Yes." "But do you *understand* why that cow is covered with hair, and the sheep with wool; or why the one is red and the other white?" "No." "But did you not tell me that you would believe nothing that you could not understand?" He was silent.

6. All over the world is the truth of that scripture verified, it is "THE FOOL," emphatically THE FOOL, "that hath said in his heart, there is no God;" *the fool* that will not believe his own senses; *the fool* that talks about demonstration, or the need of it, *to make that plainer which cannot be made more plain;* or craving after *dead* Euclid to prove the *living* Bible or moral truth. If such a thing as the very quintessence of folly can exist, it certainly is in him who is emphatically THIS FOOL.

7. Some speak of intuitive evidence as if there necessarily existed in it a sort of comparison, or "a comparison of ideas." So said Hume. "All certainty," says he, "arises from the comparison of ideas, and from the discovery of such relations as are unalterable so long as the ideas continue the same; but the only relations of this kind are *resemblance, proportion* in quantity and number, *degrees* of any quality, and *contrariety*." On which subject Dr. Beattie observes, "there are, according to Mr. Hume, *seven** different kinds of relation, to wit, *resemblance, identity, relations* of time and place, *proportion* in quantity or number, *degrees* in any common quality, *contrariety*, and *causation*. And by the word relation, he here means that particular circumstance in which we may think proper to compare ideas."

8. It is to be regretted that any more modern writer should have copied any thing from this into his view of intuitive evidence. We read in a work on logic recently printed in this country, as follows: "The relation between these objects is sometimes discovered by *barely contemplating them without reference to any thing else;* and sometimes by *comparing* them with other objects, to which they have *a known relation*. The former is simple comparison; the latter is an act of reasoning." Now, according to this, the "*barely contemplating* objects without reference to any thing else," *is comparison*. Again, "that which determines the mind in *simple comparison*, is called *intuitive evidence*." Now here we are not told that any thing else is intuitive evidence, but what determines the mind in simple comparison; yet *barely contemplating* objects is intuitive evidence: that is,

All intuitive evidence is simple comparison.

Bare contemplation is intuitive evidence; therefore,
Bare contemplation is simple comparison.

This conclusion must certainly follow, provided that the premises are correct. The major proposition, however, requires examination, for if it can be proved that all intuitive evidence is simple comparison, and something more or different from simple comparison, it is of the same character with the *false* proposition,

"All animals are birds,"

And, therefore, it cannot, from a false premiss, follow that bare contemplation is comparison.

* Therefore Hume, in this, is not consistent, speaking of only four relationships in one place, and of seven in another.

9. Dr. Beattie, refering to the affirmation of Hume, that "all certainty arises from a comparison of ideas," says, "I cannot admit that all certainty arises from a comparison of ideas. I am certain of the existence of myself, and of the other things that affect my senses: I am certain, that 'whatever is, is;' and yet I cannot conceive that any comparison of ideas is necessary to produce these convictions in my mind. Perhaps I cannot speak of them without using words expressive of relation; but the simple act or perception of the understanding by which I am conscious of them, implies not any comparison that I can discover. If it did, then the simplest intuitive truth requires proof, or illustration, at least, before it can be acknowledged as truth by the mind; which I presume will not be found warranted by experience. Whether others are conscious of making such a comparison, before they yield assent to the simplest intuitive truth, I know not; but this I know, that my mind is often conscious of certainty, where no such comparison has been made by me. I acknowledge, indeed, that no certain truth can become an object of science, till it be expressed in words; that, if expressed in words, it must assume the form of a proposition, being either affirmative or negative, and imply a comparison of the thing or subject with that quality or circumstance which is affirmed or denied to belong to, or agree with it: and, therefore, I acknowledge that in science all certainty may be said to arise from a comparison of ideas. But the generality of mankind believe many things as certain, which they never thought of expressing in words. An ordinary man believes, that himself, his family, his horse, and cattle exist; but in order to produce this belief in his mind, is it necessary that he compare those objects with the general idea of existence, or non-existence, so as to discern their agreement with the one, or disagreement with the other? I cannot think it; at least, if he has ever made such a comparison, it must have been without his knowledge; for I am convinced that, if we were to ask him the question, he would not understand us. I apprehend that our author has not enumerated all the relations which, when discovered, give rise to certainty. I am certain that I am the same person to-day, I was yesterday. This, indeed, our author (Hume) denies. I cannot help it; I am certain, notwithstanding; and I flatter myself there are not many persons in the world who would think this sentiment of mine a paradox. I say, then, I am certain, that I am the same person to-day I was yesterday. Now the relation expressed in this proposition is not

resemblance, nor proportion in quantity and number; nor degrees of any common quality; nor contrariety; it is a relation different from all these; it is identity or sameness." (But where, it may be added, is *comparison* here? How can a thing or being be compared with itself? The *same thing* with *the same thing?*) "That London is contiguous to the Thames, is a proposition which many of the most sensible people in Europe hold to be certainly true; and yet the relation expressed in it is none of these four, which our author supposes to be *the sole proprietors of certainty.*"

10. Should I, by intuitive evidence, be conscious of my own existence, and express that consciousness, by the proposition "*I exist,*" or "*I* am *existent,*" it is to be acknowledged that this consciousness, when expressed, affords two terms, or two ideas, viz: "I" and "existent." But do I proceed to obtain an adequate idea of each of these terms respectively, and then to institute a comparison, or discover some relationship between them, before I affirm, "I exist?" Certainly not, the conviction is instantaneous, without time for, or need of, any other act. It is pure mental affirmation, and nothing more. Nothing exceeds in motion the celerity of light, and nothing is conveyed more rapidly than intuitive truth. When either of them comes there is no need of going to Euclid, to comparisons, or to Hume's seven different relationships. The captain in the cabin of a ship at sea, desirous of taking a lunar observation, says to his mate, "go on deck, and tell me if you see the moon." The mate, as soon as he gets on deck, exclaims, "I see the moon." The captain, somewhat sceptical, must have previous demonstration that his mate saw the moon, and, therefore, instead of taking up his quadrant to take the observation, calls his mate down for previous examination. "Now tell me," says he, "if you are a man of sincerity, the truth, the whole truth, and nothing but the truth; I want to know the whole, not a part, of what you perceived, or were conscious of, when you said, '*I see the moon,*' together with all your thoughts, whether of comparison or relationship at the same time?" The mate can only reply, by saying, "I told you the whole, when I said, 'I see the moon.'" But were you conscious of nothing else, or did you compare or refer to all or to any of the seven relationships? whether of resemblance, identity, relation of time and place, proportion, degrees, contrariety or causation, before you were convinced that you saw the moon?" We might suppose that this mate in common with every man of sense, would reply, "I told you the whole

of what I in any way perceived, or of what I was conscious, when I said, I see the moon; neither had I time to make any comparison, whether to compare myself to the moon, or my faculty of sight to the moon, or to refer to any of the seven blue lights, you mention, taken out of Hume's dark lantern."

11. When a man expresses to another, the whole, not a part of all and every thing that takes place in his mind, when intuitive evidence, as to any single object, is perceived by any of the faculties, that expression is a proposition of *simple affirmation or negation*, without any comparison whatever. The proposition is neither interrogative nor imperative, but indicative, simply affirming or denying. It is as if truth itself then had a tongue, declaring in the simplest manner possible, "it is" or "it is not; "I see" or "I see not," "I remember," or "I remember not"—and that declaration expresses the whole, and every thing, act, or consciousness, simply connected with that truth, of which the testifier, at the time, was sensible; and the only cases wherein intuitive evidence is concerned with comparison, is either in that afforded by axioms referring to two ideas, or to two ideas where an axiom is not concerned. But the general nature expressed by intuitive, is intimated by this epithet, which is derived from the Latin verb, *intueor*, that signifies simply, *to look at*, an act more of *contemplation* than *comparison;* therefore, *it is not true that "all intuitive evidence is simple comparison."*

(Art. 114.) The first kind of intuitive evidence, is the evidence of SENSATION.

1. Fortunate is it for the welfare of man, and for that of the world at large, that few men exist, have existed, or ever will exist, but that believe the testimony of their own senses, or that of sensation. So far indeed from being not disposed to believe it, they are generally more inclined to trust to its testimony than to that of any other. The five senses, and the faculty of perceiving their testimony, have existed in the world now, for near six thousand years; had they all this time been *deceivers* and their testimony false, how many egregious blunders must have been the inevitable consequence! It is strange in this case, that amongst the many myriads that have existed in this and every preceding age, that have either inhabited houses, cultivated farms, planted vineyards, watched their flocks, fought in battles, travelled by land, sailed by sea, or navigated the world around, that none have made the brilliant discoveries that it was the peculiar fortune of Berke-

ley and his compeers to do; that the five senses a man has, and that all men have had, from the foundation of the world to the present time, have been in each, and in all cases, a conspiracy of five, in the noble and worthy system of lies and deception, practised now, without detection, except by Berkeley and a few more, for near six thousand years. And whether men are disposed to believe their senses now or not, may be easily tested. Let us go with all the dialect and suasive powers of Berkeley to that man parched with burning thirst, and going to quench it with that glass of cool water; and say, "My dear sir, let that alone, for aught you know, or ever can know to the contrary, it is nothing but hydrogen gas, sulphuric acid, or part of the moon's atmosphere." If he will not believe, we have another chance of making a convert—it is of that man nearly famished with hunger. Now let us say when he is just sitting down, with eyes sparkling over that roast beef and plumb-pudding, "My dear fellow, let all that alone, put it away, it is nothing, for aught you know, but an alligator, or an Egyptian mummy, an ourang outang, or the tail of the sea serpent." Failing of success here, we repair to that avaricious old gentleman about to take up that silver dollar or golden eagle that glistens on the table, and say, "My good sir, take my advice, let that alone, for aught you know, or ever can know to the contrary, it is nothing but a red hot coal, a boiling kettle, a polecat, the Scotch fiddle, a Chinese Mandarin, or Munchausen himself." With how many men, placed in similar situations, out of as many as the Chinese empire contains, should we prevail?

(Art. 115.) The second kind of intuitive evidence is the evidence of CONSCIOUSNESS.

1. Nothing more suitable on this subject can be offered than what has been said by Dr. Beattie. "By attending to what passes in my mind, *I know*, not only *that it exists*, but also that it exerts certain powers of action and perception; which, on account either of a diversity in their objects, or of a difference in their manner of operating, I consider as distinct faculties; and which I find it expedient to distinguish by different names, that I may be able to speak of them so as to be understood." (see art. 108, note 1 and seq.) Thus I am conscious that at one time I exert *memory*, at another time *imagination*: sometimes I *believe*, sometimes I *doubt*: the performance of certain actions, and the indulgence of certain affections, are attended with an agreeable feeling of a

peculiar kind which I call *moral approbation;* different actions and affections excite the opposite feeeling, of *moral disapprobation:* to relieve distress, *I feel* to be meretorious and praiseworthy; to pick a pocket, *I know* to be blameable, and worthy of punishment: I am *conscious* that some actions are in my power, and that others are not; and that when I neglect to do what I ought to do, and can do, I deserve to be punished; of all these sentiments I am as *conscious,* and as *certain,* as of my own existence. *I cannot prove that I feel them,* neither to myself, nor others; but that I do really feel them, *is as evident to me as demonstration could make it.* I cannot prove in regard to my moral feelings, that they are conformable to any extrinsic and eternal relations of things; but I know that my constitution necessarily determines me to believe them just and genuine, even as it determines me to believe that I myself exist, and that things are as my external senses represent them. An expert sophister might puzzle me with words, and propose difficulties I could not solve; but he might as well attempt to convince me that I do not exist, as that I do not feel what I am conscious I do feel. And if he could induce me to suspect that I may be mistaken, what standard of truth could he propose to me, more evident, and of higher authority in these matters, than my own feelings? Shall I believe his testimony, and disbelieve my own sensations? Shall I admit his reasons, because I cannot confute them, although common sense tells me they are false? Shall I suffer the ambiguities of artifical language to prevail against the clear, the intelligible, the irresistible voice of nature?"

2. "Let it not be thought, that these objects and faculties of internal sensation are things too evanescent to be attended to, or that their evidence is too weak to produce a steady and well-grounded conviction. They are more necessary to our happiness than even the objects of external sense; yea, they are no less necessary to our existence. What can be of greater consequence to man than his moral sentiments, his reason, his memory? What more interesting, than to know, whether his notions of duty and of truth be the dictates of his nature, that is, the voice of God? What is it to which a wise man will pay more attention, than to his reason and conscience, those divine monitors, whereby he is to judge even of religion itself? The generality of mankind, however, ignorant of the distinctions and explanations of their internal powers, do yet by their conduct declare, that they feel their influence, and acknowledge their authenticity. Every instance of their

being governed by a principle of moral obligation is a proof of this. They believe an action to be lawful in the sight of God, when they are conscious of a sentiment of lawfulness attending the performance of it: they believe a certain mode of conduct to be incumbent on them in certain circumstances, because a notion of duty arises in their mind, when they contemplate that conduct in relation to those circumstances. 'I ought to be greatful for a favor received,'—why? 'because my conscience tells me so.' 'How do you know that you ought to do that of which your conscience enjoins the performance?' '*I can give no further reason for it;* but I *feel*, that such is my duty.' Here the investigation must stop, or, if carried a little further it must return to this point: "I *know* that I ought to do what my conscience enjoins, because God is the author of my constitution; and I obey his will, when I act according to the principles of my conscience. Why do you obey the will of God? Because it is my duty. How do you know that? because my conscience tells me so," &c. Here, as Dr. Beattie observes, the investigation must stop, i. e. so far as *natural* religion goes, without the higher evidence of *revealed* precept.

(Art. 116.) The third kind of intuitive evidence, is the evidence of MEMORY.

1. Suppose we had no memory, no such source of intuitive evidence as this, what would be the consequence? Then all that I had done or seen, or experienced yesterday, or for months or years before, would be clean swept off the tablet of record, into the oblivious regions of an everlasting Lethe. Nay, all that I had learned yesterday, or for months or years before, by intuitive or deductive evidence, by demonstration, by Euclid, or by Algebra, would be clean gone, no one knows whither. I was composing a book last night, and had twenty ideas before me, but twelve o'clock struck, and I was compelled to go to bed, hoping that the said twenty ideas, which I thought I had well caged, would be forthcoming in the morning; but how am I mistaken! I have lost my memory. The twenty birds have flown: the cage is searched, but nothing is there! And with all my seeking, and care and sorrow, nothing is to be found; I have all to do over again; but the said twenty I shall never cage again; and thus I must go on until another twelve o'clock comes, rising morning after morning a mere vacant blank.

2. Ah! but memory lives! And its testimony, its *serious testimony*, is evidence, and needs no demonstration. Even a

child knows this. Tell that boy that was whipt yesterday, and remembers it yet, that he must not believe this, for memory is fallacious, and nothing is to be believed without demonstration. What would even the understanding of a child think of your sagacity? Yes, memory lives; and its testimony is accredited, as it testifies to me, to you, to all. Without it laws would be useless; testimony or witnesses before a court not to be had; juries would have nothing to do; and the sentence of a judge a nonentity.

3. If memory lives, it lives in conscience. And what does conscience say? Let conscience tell the tale, and that by memory's voice. What says the *memory*, the conscience of the man, that knowingly, designedly injured his neighbour, his property, his wife, his daughter, his servant, or any thing that was his? and is aware that the circumstances of the injured man have been declining ever since, and he in consequence fast sinking into poverty? Ah! but what says the evidence of *memory* in him, who pursued with "murd'rous thought," him, once his friend, to that secret place where he thought no eye saw! *Remembers* he not, how his victim, when in his power, first begged for life, were it only for his wife and family's sake? Does he not *remember* by whose hand it was by which first the fatal blow was struck? Do not his very ears yet hear his piercing cry; his eyes yet see his quivering limbs, his death's last struggle? Staid he not by the corpse disfigured with crimson streams till the glass of death glazed its eyes; till he who was in health and peace an hour ago "was minish'd from the sons of men?" Has he not since and many a day after passed the cottage of the widow, and seen her sinking into poverty and despair? Heard he not the children's cry, "My father, my father, would to God that I had died in thy stead!" What then is *memory* in that man in whom its evidence is as a burning fire, and is aware that he must feel its quenchless agony for ever; so long as his own identity shall last? Needs he demonstration when that is for ever too late? Talk to him about it, and the voice of *intuitive evidence* within him, louder than thunder, would laugh your impertinence to scorn.

> "O treach'rous conscience! while she seems to sleep
> On rose and myrtle, lull'd with syren song,
> While she seems nodding o'er her charge to drop,
> On headlong appetite the slacken'd rein,
> And give us up to license, unrecall'd,
> Unmark'd, see from behind her secret stand,
> The sly informer minutes every fault;

And her dread diary with horror fills.
Not the gross act alone employs her pen;
She reconnoitres Fancy's airy band,
A watchful foe! the formidable spy
List'ning, o'erhears the whispers of our camp,
And steals our embryos of iniquity,
Thus with indulgence most severe, she treats
Us spendthrifts of inestimable time;
Unnoted; notes each moment misapplied;
On leaves more durable than brass,
Writes our whole history, which Death shall read
In ev'ry pale delinquent's private ear.—*Young*.

(Art. 117.) The fourth kind of intuitive evidence, is that of

AXIOMS OR SELF-EVIDENT TRUTHS.

1. An axiom is a sentence expressing a self-evident truth. Though an axiom is, *in itself*, a self-evident truth, yet even this, self-evident as it is, may not be such until the terms which compose it are understood; but when they are, their agreement is so plain, that not only the conviction of the truth they express, is, in every rational mind, inevitable, but also so clear, that any attempt at demonstration, were it possible, would be unnecessary; for this attempt itself refers to the axiom, "*It is impossible to make plainer, that which cannot be made more plain.*"

2. In this sense, an axiom is analogous to what we have said of evidence. An axiom or evidence may be an axiom or evidence to A, B, and C; why? because they are able and willing to understand it; but not to D, because either he does not understand the terms, and therefore cannot perceive the agreement, or his faculties have not been in healthy and efficient exercise to enable him to comprehend either terms, their agreement, or any thing about it. But that is no reason that it should not be an axiom or evidence. It will remain unchangeably and eternally what it is, an axiom or evidence, notwithstanding D's unbelief or want of comprehension to understand the terms. For these are the glorious and correlative attributes of truth. For what is truth now, ever has, and ever will be, *immutably, eternally* truth, notwithstanding all the fogs of ignorance, the mists of unbelief, the clouds of scepticism, and the miasma of dissipation, to the contrary.

3. Though the terms of an axiom may *sometimes* require explanation, yet their agreement requires no proof, for as this is *intuitively* evident, it admits no *medium* more clear or certain than itself. If it admit of proof clearer than itself, let

us try, and take for trial, the following axiom, "the *whole* (W) is equal to all its parts," (A, B, C.)

All the parts are equal to W,

A, B, C, are all the parts,
A, B, C, are equal to W.

Of course this is a proof of a proof, and another proof besides, that *it is impossible to make plainer that which cannot be made more plain.* The folly of attempting any such thing was known as far back, at least, as Aristotle, yet that *honest heathen*, Aristotle, ignorantly as he has been censured by those that never understood him, had not only more honesty but more sense, than many of the modern *apes* of what they call, forsooth, philosophy.

4. Some have had the hope that the happy day would come when axioms could be made more plain, and that all and every one of them might be reduced to *identical propositions!* Now, what are identical propositions? They are such as these; "*sugar is sugar*," "*salt is salt*," "*the same thing is the same thing*," Blessed philosophy this! *The sceptics millenium of identical propositions!* So then we must wait before we admit one particle of truth, until so much sunshine shall come as to enable us to make the grand discovery, that *the same thing is the same thing!!* But still even this would not be sufficient, for the glory of the Pyrrhonists was, that *only one thing was certain!* What was that? "That every proposition, axiom or identical, was *uncertain*," consequently, with them only one thing was *certain*, which was, that it was *uncertain*, that A was A, or B was B. But they contradicted the declaration by their own practice, since they would neither run into fire nor water, though they professed ignorance that the one would burn, and the other would drown them.

5. "We are convinced by a demonstration," says Dr. Beattie, "because our constitution is such that we must be convinced by it, and we believe a self-evident axiom, (for the same reason) because our constitution is such that we must believe it. You ask, why I believe what is self-evident? I may as well ask why you believe what is demonstrated? Neither question admits of an answer; or rather, to both questions the answer is the same, namely, because I must believe it." *See Beattie, part* 1, *chap.* 2. An axiom, therefore, is a complete proof as well as a demonstration; and to attempt to demonstrate an axiom, or *to prove a proof*, is as ridiculous as to wait to see a second sun rise to enable us to see if the first

shines in the heavens; or to call the maid to bring the second candle to help you to see if the first is shining on your table. But this is the depth of foolery into which mathematical scepticism has already sunk, in talking about proving moral, or all truth, by mathematical demonstration; *the light of a candle to see if the sun is shining!*"

6. In the mind's contemplation of an axiom there is something analogous to the properties of the eye. Though, of a landscape, the eye can take in, more or less distinctly, a large extent, yet there is only one point, that the eye sees *distinctly* at the same time. Standing on the top of a hill, my friend says, "are those *two* creatures in that distant field, the same kind of animal?" I look at the one, and then at the other, and find them to be different. Now here are two objects, and two movements of the eye. So in an axiom there are two ideas, with which the mind acts to produce assent or dissent. This is comparison; and the evidence of axioms is a case wherein, in intuitive evidence, comparison is necessary. The intuitive evidence of sensation, consciousness and memory, and the *whole* of every mental act and thing felt or implied therein, may be fully expressed by a proposition of simple affirmation or negation; as, I see, I am conscious that I know or remember A; or I do not see, am not conscious that I know or remember A. But the evidence of axioms implies two ideas and comparison, as in

1 2
The whole is equal to the sum of all its parts.

1 2
The whole is greater than any of its parts.

1 2
Non-existence agrees not with existence of the same thing at the same time.

INTERROGATORY EXAMINATION,

ON

CHAP. VII.

Q. 1. What is intuitive evidence? Art. 113.

Q. 2. How many kinds of intuitive evidence are there? 113. 1.

Q. 3. What do you mean by the evidence of sensation? 114.
Q. 4. What may be understood by the evidence of consciousness? 115.
Q. 5. Is the evidence of memory one of the kinds of intuitive evidence? 116.
Q. 6. Explain the evidence of axioms. 117.
Q. 7. What is an axiom? 117. 1.
Q. 8. Can an axiom be made plainer than it is, or demonstrated? 117. 3.

CHAP. VIII.

Deductive Evidence.

(Art. 118.) DEDUCTIVE EVIDENCE is that which is expressed in a conclusion correctly *deduced* from premises known or admitted, to be true.

I. We have already observed that evidence may be expressed by an affirmative or negative proposition; but before we pronounce that proposition, we have evidence, without which propositions are useless. A single proposition may be the expression of either *intuitive* or *deductive* evidence. If the latter, it is deduced from others preceding it; and in this sense a deductive proposition, which is a conclusion, might be considered to be rather the property of syllogism: but as a syllogism exists not without the materials which compose it, and single propositions are those materials, we shall not defer seeking after the materials until after the house is built.

2. Deductive evidence, reasoning or demonstration, is founded on intuitive evidence. Reasoning, by which deductive evidence is obtained, begins with two ideas expressed by an intuitive proposition, or by one previously established or demonstrated, which were originally intuitive, until we obtain the third. Almost all the propositions of science, most of those of the arts and of business, and those propositions by which the mind receives conviction, by the exercise of its faculties, are of this class.

3. It is affirmed to me that the monument A is higher than the monument B. I doubt this; I have seen them both, i. e. I have had *intuitive evidence* that they both exist, but I have not intuitive evidence that the altitude of the one is greater

than that of the other, or that they both are equal. The one is ten miles from the other, and I cannot carry the monument A to the monument B, to compare the two ideas, which their juxta-position would afford. In this difficulty, I remember the axiom, "Things equal to the same third thing are equal to one another." I therefore take this "third thing," the measure C, or make it precisely equal to the height of B. I then take the "third thing," C, to A; and find C and A perfectly equal; consequently, I can reason or say,

C is equal to A,
B is equal to C; therefore
B is equal to A.

This is deductive evidence; or evidence deduced from three *intuitive* acts, viz: 1. Things equal to the same third thing are equal to one another. 2d. The *intuitive* conviction that A is equal to the third thing C; 3d. The *intuitive conviction* that B is equal to the same third, or C; therefore the *deductive* evidence is that B is equal to A.

4. Deductive evidence involves a field as unlimited as the subjects which can be comprehended by the understanding. A conclusion derived by it forms a premiss, a second may be obtained the same way, or from an axiom of intuitive evidence; these two may constitute the premises of another act of reasoning, giving another conclusion of deductive evidence, and thus the process may be continued, on indubitable premises, through a series of indefinite extent, filling a volume, as Paley's Evidences of Christianity, or composing a whole treatise on science. Thus let it be granted to me that "all thinking beings are spirits;" that "spirits have not the properties of matter, as extension;" here are *two* postulata granted. I may from these two derive *five* conclusions of deductive evidence; thus,

1.

All thinking beings are spirits.
The mind is a thinking being; therefore
The mind is a spirit.

2.

Spirits have no extension.
The mind is a spirit; therefore
The mind has no extension.

3.

Things having no extension are indivisible.

The mind has no extension; therefore
The mind is indivisible.

4.

Things indivisible are indissoluble.

The mind is indivisible; therefore
The mind is indissoluble.

5.

Things indissoluble are immortal.

The mind is indissoluble; therefore
The mind is immortal.

The mind is immortal, or shall exist for ever!

5. Thus the process by which an ultimate conclusion of deductive evidence is obtained, may sometimes involve an extensive series, or several acts of reasoning. The whole of this may sometimes rapidly pass in the mind from one conclusion to another, without the necessity, on every occasion, of formally stating every premiss. Nevertheless, when legitimately conducted, the ultimate conclusion will be correct. A gentleman in Yorkshire was disposed to doubt of the existence of his own soul, *simply because he could not see it.* In the course of his evening's walk, he came to the lock of a canal, and stood to contemplate the gate by which it was enclosed, and withstood the pressure of a considerable mass of water. He viewed the machinery by which the two parts of the ponderous gate were opened or shut; the peculiar position of these parts when closed, not at right angles with the direction of the canal, but at an angle or position towards the point of pressure, such that the greater the pressure the more firmly were they closed. He inquired who had done this? Mr. L. the engineer. But who is Mr. L.? is he body? But body cannot study mechanics, hydraulics, or hydrostatics. And here is a VISIBLE proof that whatever has done this must have *understood* the principles which these sciences involve. These gates which *I see* are an expression of science, and body cannot study science; and if not body, it must be mind; but where is that mind? I do not see Mr. L. or his mind here; nevertheless he has left here a proof of the existence of mind; that proof I can *see, feel,* and even *hear* the roaring, the dashing of water against the gates, which, notwithstanding, during every hour of the day and night, they withstand. Mr. L. is therefore mind, though neither Mr. L. nor his mind can I now

see. But let me continue this thought. What was that statue I saw in the cathedral last week? Was it not the expression of *mind?* What but mind, something that understood the form, the figure of a man, the position of the muscles according to the attitude assumed, could have produced it? What produced that painting, which is acknowledged to be the chef-d'œuvre of the art? Was it merely the hand of the painter, the pencil or the paint? That is only body, and bodies are common to all men; but not one man in a thousand, nor all the bodies in the world could produce this, any more than all the bodies in the world could make a watch. Thus that mansion, exhibiting such architectural design, such elegancy of taste, every accommodation and convenience, in situation or arrangement, suited to *foreseen* wants or pleasures, is an expression of mind. If so, then all that I see in the city or the town, its buildings, churches, mansions, cathedrals, temples, are the proceeds of art, and art is the production of mind, of previous thought and design. And though that mind is not seen here or there, yet here are they which testify by visible, audible and tangible testimony that mind exists in them, in me, in all capable of thought or design. I overcome my doubt, and perceive that ultimately TRUTH and VICTORY will be SYNONYMOUS TERMS, and all that oppose it will sink into everlasting contempt. I now write down the sum *deduced* from my evening reflections in this short compass.

Whatever designs is mind.
I design; therefore,
I am mind.

6. By a similar process, we may obtain the *deductive evidence*, the synopsis of which is expressed in the following short compass.

What acts necessarily is not an agent, but an instrument controlled by another.
Necessity acts necessarily; therefore
Necessity is not an agent, but an instrument controlled by another.

Whatever acts from another necessitating it to act, implies something antecedent to itself.
Necessity acts from another necessitating it to act; therefore
Necessity implies something antecedent to itself.

Whatever acts by regular and consistent laws, implies an intelligent agent enacting those laws.
Nature acts by regular and consistent laws; therefore
Nature implies an intelligent agent enacting those laws.

That which never formed an organized being, never was a creator.

Chemical affinity never formed an organized being; therefore
Chemical affinity never was a creator.

Whatever never produced one new plant or animal, never was a creator.

Perpetual appetency* never produced one new plant or animal; therefore
Perpetual appetency never was a creator.

An hypothesis countenanced by no known facts in nature, has no claims to rationality.

Atheism is countenanced by no known facts in nature; therefore
Atheism has no claims to rationality.

All things that are now what they always have been, deny the existence of casual formations.

Men, animals and plants are now what they always have been; therefore
Men, animals and plants deny the existence of casual formation.

Whatever cannot show an example of the first rudiments of organization, or spontaneous generation, cannot disprove the pre-existence of an intelligent first cause.

Atheism cannot show an example of the first rudiments of organization, or spontaneous generation; therefore
Atheism cannot disprove the pre-existence of an intelligent first cause.

That an unthinking, undesigning being should produce intelligent and designing beings, is an absurdity.

Chance is an unthinking, undesigning being; therefore that
Chance should produce intelligent and designing beings is an absurdity.

What cannot produce that which requires less energy, never could produce what requires greater.

Chance never built a cottage, which requires less energy; therefore
Chance never could produce (the world) what requires greater energy.

What could not draw a portrait, never could make a man.

Chance never could draw a portrait; therefore
Chance never could make a man.

* By this, the atheist means what he calls "the eternal effort," comprising the following three absurdities, viz. 1, the power of *nothing* to create *something*; 2, of an *imperfect* thing to create a *perfect* thing; 3, of a *senseless* thing an *intelligent* thing.

The structure of achromatic telescopes proves the pre-existent knowledge of the laws of light, in the inventor.
The structure of the eye is the structure of an achromatic telescope; therefore
The structure of the eye proves the pre-existent knowledge of the laws of light in the inventor: (i. e. God.)

Whatever combines inimitable complication of machinery, could not, in millions of ages, have been produced by any fortuitous combinations of matter, but must have had a designing cause.
The eye combines inimitable complication of machinery; therefore
The eye could not, in millions of ages, have been produced by any fortuitous combination of matter, but must have had a designing cause.

(Art. 119.) *Deductive Evidence* is of two kinds, MATHEMATICAL and MORAL.

(Art. 120.) *Mathematical Evidence* is that which is *deduced* from axioms or self-evident truths relative to number or quantity.

1. Mathematical evidence is of two kinds, *intuitive* and *deductive*. Mathematical Evidence is intuitive, as in the case of axioms, (see Art. 117,) when from the very nature of the ideas they contain, it appears, at first view, that they must necessarily agree or disagree. Mathematical evidence is deductive, when the conclusions established are deduced from axioms, from postulata, (or truth, generally as clear as axioms, the granting of which is demanded,) or from some other conclusion or conclusions, previously demonstrated and admitted to be true. This species of mathematical evidence again is divisible into two kinds, the *direct* and the *indirect*. When a conclusion is infered from principles which render it necessarily true, the demonstration is *direct*. When by supposing a given proposition false, we are necessarily led into an absurdity, its contradictory is infered to be true, which is called *indirect*.

2. "All mathematical proof is founded on axioms or propositions, *the contraries of which are inconceivable*. And this sort of proof seems to be peculiar to the sciences that treat of quantity and number; and therefore, in no other science is the mathematical *method* of proof to be expected. For, in the other sciences, in most of them at least, *truth and its contrary are equally conceivable*." So says Mr. Andrews; does he mean, that in every case, *that which is contrary to*

truth is conceivable to be true? We know that an eye may be so diseased that a man may fancy that the grass is yellow, that a horse is green, or that a tall thistle nodding by moonlight, is a ghost: such an eye requires the oculist. Mr. Andrews proceeds to say, "that Julius Cæsar died a natural death is easy to be conceived." Maniacs, certainly, believe many strange things, as well as the man that believed he was made of glass. But whoever was determined to disbelieve that testimony to which the world assents that Cæsar died by assassination in the Senate House. It cannot be proved mathematically it is true, and it would be ridiculous to attempt it; yet, for reasons no better than this some talk as if there was a superiority in mathematical reasoning. There is certainty in it, it is true; but is there certainty in nothing else? "We may conceive," says he, "that the sun, after setting to-night will never appear again, or that any particular man will never die," (as Paracelsus did;) "and yet we consider death as what must inevitably happen to every man, and the rising of the sun to-morrow so certain, that no *rational* being can doubt of it. Though therefore the mathematical *method* of proof is to be found in the mathematical sciences only, yet *satisfactory proof* may be found in any other science: *and is actually found* in every part of knowledge that deserves the name of science."

3. Mathematical reasoning is "a successive comparison of every pair of ideas, from the first to the last, or from the idea which forms the *subject* of the proposition to the *predicate;* and in demonstration every comparison is intuitively certain. When these ideas are found to agree the demonstration is finished.

For example, in the 47th proposition (a conclusion,) of the first book of Euclid, the truth to be established is, *that in a right angled triangle, the square of the side opposite to the right angle is equal in quantity to the sum of the squares of the other two sides.* The square opposite to the right angle is the *subject*, the sum of the two other squares is the *predicate*, and the idea of the extent of the first square is to be compared with the idea of the sum of the other two squares.

Argument I. The first step is to prove that G A C* is one straight line, and H A B another, in order to lay a foundation for demonstrating that the triangle F B C is equal to half the square F A, and the triangle A B D equal to half the parallelogram B L.

II. The next step is to prove the triangle A B D equal to the triangle F B C.

III. The third step is to prove the triangle A B D equal to half the parallelogram B L and the triangle F B C equal to half the square F A, and hence to infer the equality of the square F A to the parallelogram B L.

* See the figure in Euclid's Elements.

IV. Three similar steps are necessary to find the square A K equal to the parallelogram C L: and hence to infer the equality of the whole square B E, to the two squares F A and A K, which establishes the agreement of the *subject* and *predicate* of the proposition."

In this process there are no less than six capital steps, each including subordinate steps, or twelve subordinate steps in all, which with the former are equal to *eighteen intermediate ideas.*

(Art. 121.) Moral evidence is that which is deduced from axioms or self-evident truths, and conclusions established on correct premises relative to facts and conduct.

1. Moral evidence in the whole extent in which some take it, has been made to include *probable* testimony; that is, the day has been made to be the night, or the night the day.

2. The valuable remarks of Dr. Beattie on this subject, claim attention. "That my body exists, and is endued with a thinking, active and permanent principle, which I call the soul;—that the material world hath an existence;—that the men, beasts, houses, and mountains, we see and feel around us, are not imaginary, but real and material beings, and such in respect of shape and tangible magnitude, as they appear to our senses; I am not only conscious that I believe, but also certain, that such is the nature of these things; and that thus far at least, in regard to the nature of these things, an omniscient and infallible being cannot think me mistaken. Of these truths I am so certain, that I scruple not to pronounce every being in an error who is of a contrary sentiment concerning them. For suppose an intelligent creature, an angel for instance, to believe that there are not in the universe any such things as this solar system, this earth, these mountains, houses, animals, this being whom I call myself; could I, by any effort, bring myself to believe that his opinion is a true one? It is impossible and inconceivable. My understanding intimates, that such an opinion would as certainly be false, as that two and two are equal to ten, or that things equal to one and the same third are unequal to one another. So long as this solar system remains unannihilated, and my intellect undepraved, *there is not a geometrical axiom more true, or more evident to me, than that this solar system, and all the objects above mentioned, do exist; there is not a geometrical axiom that has any better title to be accounted a principle of human knowledge; there is not a geometrical axiom against which it is more absurd, more unreasonable, more unphilosophical, to argue.*

3. "That snow is white, fire hot, gold yellow, and sugar sweet," (how are these to be mathematically demonstrated?) "we believe to be certainly true. These bodies affect our eyes, touch, and palate, in a peculiar manner; and we have no reason to think that they affect the organs of different men in a different way; on the contrary, we believe with full assurance, founded on sufficient reason, that they affect the senses of all men in the same manner.

4. "Of moral truth, we cannot bring ourselves to think that the Deity's notions (pardon the expression) are contrary to ours. If we believe him omniscient and infallible, can we also believe that, in his sight, cruelty, injustice, and ingratitude, are worthy of reward and praise, and the opposite virtues of blame and punishment? It is absolutely impossible. The one belief destroys the other. Common sense declares that a being possessed of perfect knowledge can no more entertain such a sentiment, than I, with my eyes open, can just now avoid seeing the light. If a created being were to think that virtue which we think vice, and that vice which we think virtue, what would be our notions of his intelligence? Should we not, without hesitation, pronounce him irrational, and his opinion an absurdity? That any being should think in this manner, and yet not think wrong, is to us as perfectly inconceivable as that the same thing should, at the same time, be both true and false.

5. "Those who will not allow any truth to be self-evident, except what has all the characteristics of a geometrical axiom, are much mistaken. It would be easy to reduce intuitive certainties into classes, but this is not necessary on the present occasion. We are here treating of the nature and immutability of truth, as perceived by human faculties. Whatever intuitive proposition man, by the law of his nature, must believe as certain, or as probable, is, in regard to him, certain or probable truth; and must constitute a part of human knowledge, and remain unalterably the same, as long as the human constitution remains unaltered. And we must often repeat, that he who attempts to disprove such intuitive truth, or to make men sceptical in regard to it, acts a part as inconsistent with sound reasoning, and as effectually subversive of human knowledge, as if he attempted to disprove truths which he knew to be agreeable to the eternal and necessary relations of things."

6. Thus thought Dr. Beattie, and so thinks every man whose mind is not *fractional*, but, at least, an *integral* quan-

tity. Some, however, give the precedency to mathematical demonstration; but that is, for no better reason than some such as the following. Mr. X *plus* Y says, "I intend to instruct my son in the principles of mathematics, mechanics, &c.; but as he is only eight years of age, and, of course, a *little boy*, and cannot, therefore, form adequate ideas af *abstract* quantities, I shall supply him with *visible*, *tangible* symbols of *real* squares, triangles, circles, *solid* cubes, cylinders, cones and their sections; now these he can *see, feel*, by *bodily* sense, whether his mind be *integral* or not; he can turn them over, place and arrange them in every *visible, tangible* way, *for he is but a boy.*" Very well, let *all boys*, then, whether of eight or *fifty* years of age, begin with things, which if not visible and tangible, at least refer to things which are visible and tangible, and continue to imagine that all moral truth is beyond their comprehension, merely because it is not *visible* and *tangible;* and that, therefore, they can form no ideas of virtue, vice, justice, cruelty, mercy, nor of any relations between them, nor appreciate Him, who is the unclouded sun of eternal truth. Pulmonary consumptions are serious enough, but for the mind to *wane* into such a narrow contracted state as this, implies a condition of mental wretchedness extremely unenviable. Owls, however, naturally shun the light, but of *unfeathered owls*, as yet, we have met with no adequate definition.

7. Men exist, even in this city, if beings with the understanding of men they can be, who talk about the necessity of proving every thing mathematically, before it can be admitted to be truth! Had such mathematicians been born, as many are, in mines, where no sun is to be seen, how by mathematical demonstration, could they have proved either the existence or nature of light, its divisibility into the prismatic colors, or its properties, of reflection, refraction, or polarization? yet they know that these are facts or existing laws and properties, without the aid either of them or their demonstrations. Do these things either not exist, or is no man authorized to believe them without the warrant of these gentlemen of the *itaque, ergo,* and *idcirco* genus?

8. Now is there no such light as MORAL LIGHT; or is that which is called moral truth, some imaginary thing, without either light or heat? Is there no intellectual sun that can shine on minds not as wilfully blind as theirs, without the need of their demonstrations, their Euclid, their algebra; or need we their "*Pons asinorum,*" their "*ass's bridge,*" to get over all difficulties, in order to see such light? Is that moral truth

either not allowed to exist, or must he that *sees* its light, and *feels* its warmth and energy, wait until some demonstration can be hit upon to make all plain? Shall the *blind* teach those that *have sight;* the *deaf* those that *can hear;* the *callous stone* those that *can feel?* Shall Euclid, Simpson, Euler, Emmerson, Bernoulli, dead men all, cooled down to we know not how many degrees below Zero, teach us that there is neither moral light or felicity? Can it be that such small-eyed gentlemen exist that expect that the advocates of moral truth are to wait until the *dead* can teach the *living?* If there be such a thing as truth, and *living truth* too, *a sun that wants no candle,* cannot that which is essentially truth declare more concerning itself than ever *blind guides* can do?

9. By the generality of writers, probable evidence is made co-extensive with moral evidence; that is, in their view, "all moral evidence is probable evidence!"* And by way of apology they tell us, that the word *probable* is ambiguous, having a philosophic as well as a common acceptation; in the former implying every thing not mathematical. But what kind of consolation is this to the reader who never heard of this distinction, and by the word probable understands any thing contingent or not certain, especially when in addition to all this, he is told that there is no *certainty,* but what will submit to the test of mathematical demonstration, that all the rest is probable? Thus then have we a *probable sun, a probable moon, a probable fire,* and not only so, but a *probable burning,* and *probable scalding, probable pleasures, and probable pains;* and that too, even if the pains should be of the unmathematical genus, that they are *pains that can be felt,* whether of the gout or tooth ache, yet are they *probable,* because not mathematical. Thus the man that comes into the parlor, nearly frozen with cold, and is told, that there is a fire in the kitchen, whether he first *believes* this on testimony, or when he *sees it* on entering the kitchen, or when he is *cheered by its warmth,* still from beginning to end it is all *probable* because not *mathematical.* Water and the thirsty, and beef and the hungry are excellent juxta-positions, and by them, the thirsty and the hungry have the *probable* evidence that the necessities of nature are satisfied; but the hungry and thirsty

* To the honor of mathematics generally, and of mathematicians too, not of the class to which we allude, who with all their boasted powers, *probably* never read, much less understood, the Principia of the "facile Princeps" of mathematics, Sir Isaac Newton, these were not his views. Sir Isaac was not only mathematically, but morally great; and his dying words evinced that the light of moral truth was shining on his soul.

say that their evidence is better than the *mathematical.* It is true that what may be moral certainty and conviction to me may not be such to you, any more than what is mathematical certainty and conviction to you, may not be such to him who never read Euclid. But this, in either case, alters not the fact, which is, that EVIDENCE EXISTS in both cases, *whatever may be the faculties of perceiving it in either,* and they two will remain eternally distinct without the necessity of the one proving the existence of the other, *any more than it is necessary that the light of the sun should prove the light of the candle, or the light of the candle prove the light of the sun.* But the licentious and unwarrantable latitude of this philosophic sense of the word probable is an insult to common sense; and an indignity to the Fountain of Truth himself, and Parent of the very sun that shines in the heavens. It goes so far that it proves too much; for the demonstration of the mathematician is *certainty,* whilst the existence of the thinking power of him that produced it, rests on *probable* evidence. Here *probability* produces *certainty,* the *less* the *greater;* or in other words *the less is greater than the greater!!* which comes to one of a mathematician's "*third things,*" which he commonly calls "*quod absurdum est.*" Here then is mathematical monomania, that involves, in some Cartesian vortex of probable evidence, the word, the testimony, the evidence, the certainty of Him who is essential and immutable veracity, the Original and Eternal Fountain not only of the Moral Sun, but of all the suns that ever did and ever will shine; and goes, at least next door to giving even Him the lie, merely because He is either not mathematical, or because either He himself, or his testimony is not now, nor ever will or can be comprehended within the narrow limits of three or four hundred pages of Euclid's Elements. And thus the sons of truth are to be told, whether they first merely *believe* this testimony, and afterwards, as in the case of the man at the fire, begin to *see it,* and then to feel and enjoy its renovating warmth, whether they have tested, through all the severest vicissitudes of human life, for one or forty years, the veracity of that which has been proved changeless from the days of martyrology to the present; yet it is all something *probable* because not *mathematical!!* But the day is coming when that moral truth will be found on a rock, that will stand firm when all else shall shake, and the Sons of Truth, in its noon-tide glory, shall wave the trophies of eternal victory in CLOUDLESS SPLENDOR, when all things else, including mathematical diagrams, shall be *dark.* It is time then that this word *probable,* as

applied to moral truth, should be swept from the pages of every book that has the least regard to truth, with a broom dipt in nitric acid keen enough to sever eternally the *limb of the dead* from the *soul of the living*.

10. Moral evidence involves all that portion of human testimony which a large number of the most intelligent part of mankind have, in all ages, after due examination, found to produce certainty in every rational mind. But in a work first printed at Boston, in the year 1821, the following example, in order to show certain differences between mathematical and moral reasoning, is given, viz: "The assertion, that Carthage was never taken by the Romans, *though false, is not absurd;* for there was a time when it was true." This sentence if it mean any thing to the purpose, must signify as follows. The assertion, *now*, in the year 1821, that Carthage was never taken by the Romans, is not absurd; that is, it is not absurd to contradict that concurrent history and *testimony* which all rational and competent men have, in all ages since, admitted to be *evidence*, and that for this good reason, that *a time was*, when Carthage was not so taken, and consequently *then*, no such fact was to be contradicted! The *evidence* that "the Romans once possessed Great Britain," is made up of the following accumulative *testimonies;* immemorial tradition; original manuscripts; early biographical records; the testimony of historians; the ruins of Roman buildings, camps and walls; Roman coins, urns, vessels, and inscriptions; the several vestiges from the first, discovered almost every year, and the universal belief and assent of all men to this fact; but for any man having the opportunity to be informed, to say that this accumulative testimony is not evidence, or evidence in any rational mind to command conviction, would certainly be *absurd*.

(Art. 122.) PROBABLE TESTIMONY is that which does not amount to EVIDENCE, and is *deduced* from declarations or inferences not amounting to CERTAINTY.

1. Thus then, for the first time, the bold step is taken, to deny the existence of any such thing as *probable evidence;* which implies a contradiction. "Evidence," as already defined, and contradistinguished from testimony, (Art. 106 and 107,) "is that complete testimony or concurrence of testimonies, which is sufficient to produce certainty or conviction, in faculties capable and willing to perceive it." Evidence, therefore, if not certainty to those who will not perceive it, is

sufficient in all minds of rational conduct, of producing certainty. To those that perceive it, evidence and certainty, though not identical, are yet as near as cause and effect. To talk of probable certainty would be certainly ridiculous, and probability producing certainty is not much better. We therefore deny the existence of any such thing as probable evidence, a term that has been productive of confusion in the minds of thousands; though we fully admit the existence of probable testimony, since the whole of testimony until it amounts to evidence is probable. (Art. 106.) We cease to attach the terms of *probable* testimony or *probable* evidence either to moral evidence or moral truth. That which has been established, tested, tried in all ages, by every kind of proof, not excepting *visible, audible, tangible, external, internal, individual, social,* and in every other way that rationality can possibly require, we cannot, we will not, call *probable* evidence, or *probable* testimony; but on the contrary, what we have known and seen, we, according to unalterable conviction, testify, that the sun needs no candle. Stars give probable testimony to the doubtful traveller, but when the sun rises, these scintillations vanish.

2. When HUMAN TESTIMONY rests on the attestation either of a single individual, or of more, not of known character or veracity; or when the witness is not competent to know what he says, or was not at the time in circumstances requisite to enable him to know the fact to which his testimony refers; or when, from motives or inducements favorable to his temporary interest, he is suspected not to say what he knows, it is a case that falls within the limits only of probable testimony.

3. PROBABLE TESTIMONY is also frequently derived from common experience, or such experimental facts which either have not been often repeated, or if repeated, not attended with results sufficiently uniform to establish any thing more than a presumptive conclusion. The success of a medicine, salutary in seven cases out of ten, and apparently injurious in three, is a question only of probability. "An equal number of favorable and unfavorable instances leave the mind in a state of suspense, without exciting the smallest degree of assurance on either side. When the favorable instances exceed the unfavorable in number, we begin to think the future event in some degree probable, and more or less so, according to the surplus of favorable instances. A few favorable cases, without any mixture of unfavorable ones, render an event probable in a high degree; but the favorable experience must be

both extensive and uniform, before it can produce moral evidence."

4. ANALOGY is also a source of probable evidence. Thus a gentleman knowing that acidity is extremely injurious in the gout, to which he is subject, and also that three grains* of magnesia will neutralize the acidity in one wine glass of Sherry, judges, by *analogy*, (for the case appears *similar*) that the same quantity will produce the same effect in a glass of Port wine. This analogy, though it brings him near the truth, yet not exactly, since *Port wine is different from Sherry*, the acidity of which, on experiment, he finds to absorb three and a half grains, instead of three.

4. The calculation of chances has also been reckoned as a source of probable testimony. The doctrine of chances is that which teaches the degree of probability or improbability of any *one* of a given number of events, considered as equally possible. It is a mathematical, not strictly a logical subject, for which Demoivre's doctrine of chances may be consulted.

INTERROGATORY EXAMINATION

ON

CHAP. VIII.

Q. 1. What is deductive evidence? Art. 118.
Q. 2. Wherein does deductive differ from intuitive evidence?
Q. 3. How many kinds are there of deductive evidence? 119.
Q. 4. Give me a definition of mathematical evidence. 120.
Q. 5. Describe moral evidence. 121.
Q. 6. What is probable testimony? 122.

* The rule may be, for one wine glass full, or two ounces of Sherry, three grains of magnesia; three and a half grains for Port wine; five grains for Vidonia; five grains for Porter, and two and a half grains for Beer.

PART III.

ON ARGUMENTATION.

On Induction and Analogy.

CHAP. I.

Section I.

INDUCTION.

(Art. 123.) Induction, *in a general sense*, is that process, by which we examine the properties of individuals, or of species *without* or *with* reference to those properties being common to the whole species or genus; and is of two kinds; the former is discursive, the latter argumentative.

(Art. 124.) Discursive induction is that process, by which we examine the properties of individuals or of species, without reference to those properties being common to the whole species or genus.

1. This may be, and is often done, by all persons of observation or reflection, whether accidentally, or intentionally, though not in the first case with any view to obtain the premises to constitute an argument. Thus a person in early life may remember that he observed that an individual, suppose *a*, (it may be an animal, a man, a vegetable, a mineral, &c., as the case may be,) has a property, which call *x*; afterwards he may perceive that the individual, *b*, has the same property *x*; and as he advances in *life* or in *experience*, or travels by land or sea, whether these observations be accidental or intentional, he notices, that other individuals, as *c*, *d*, *e*, and *f*, have each respectively, the property x. This begins to make some impression on his mind; though at first his observation seemed casual, yet the accumulated instances lead him to *presume* that there exists some general law, of which at first he had no conception. (It may be a case in theology, natural history,

philosophy, trade, law, or even phrenology, &c.) The numerous facts lead him now to read or converse on the subject, by which means he learns, that the individuals, *a, b, c, d, e, f,* all belong to one species, viz: to the species A; but that there is another individual of that species, *g*, which he has not observed; neither can any man or book give him information as to *g:* and where to find *g*, he knows not; nevertheless, as he has six cases established out of the seven, he has strong presumptive or probable testimony of the existence of a general law, which he can now express, by saying, "*All individuals of the class A, have the property x.*" Though argumentation originally was not his intention, yet he is now in possession of the major premiss of an argument, which, until *g* can be examined, is at least presumptive; but he may from a *presumptive premiss* deduce at least, a *presumptive conclusion* of strong probability; viz.

All individuals of the species A, have the property x.

g belongs to the class A; therefore
g has the property x.

2. In the course of time, he meets with *g*, and finds it has the property x. Now he can express the general law, from a *certain* premiss, and prove that the major of the former syllogism, at first presumptive, is a conclusion of certainty from premises experimentally tested and found also to be certainties; viz.

a, b, c, d, e, f, g, are all the individuals of the class A.

This he learned from books or conversation.

The property x is common to a, b, c, d, e, f, g.

This he learned experimentally.

The property x is common to all the individuals of the class A.

The fact established as a principle of science.

3. These observations at first, or as to *a, b, c,* &c. were merely casual, without reference to, or even the knowledge of, any general law or property, when the induction is merely *discursive*, or the collection of facts known and observed by *experience*, or even by *experiment* casually noticed, or intentionally instituted; but still if intentionally, not with reference to any law as yet, of course, unsuspected.

4. But as the instances are increased, through the successive steps, *d, e, f,* a *presumption* in proportion arises, that such a law, at first unsuspected, would be, could all the cases be examined, found to be general, as to some class as yet un-

defined, and not known to be the class A. Here the induction ceases to be purely discursive, or wandering, but is in search of some class, and the individuals composing it. An indistinct view of some object or principle of science arises, as yet like twilight, on the mind, excites inquiry, which is answered by the further information that the several individuals, *a*, *b*, *c*, *d*, *e*, *f*, *g*, compose a class or species, called A, and that g only remains to be examined. A probable conclusion as to the actual existence of a general law at first suspected, and co-extensive with the whole class A, now takes place, and induction becomes *argumentative;* as yet from *assumed* premises, until g, the only remaining individual of the class, is examined, when the induction is completed by forming a syllogism on *certain* premises, which, when regular, declares *a principle of science* no longer a matter of doubt or controversy.

(Art. 125.) ARGUMENTATIVE INDUCTION is that process, by which we examine some property of particulars until we arrive at their universal, *on the presumption* that the property observed, is common to the universal; *in order to establish the requisite premises for argumentation.*

1. Thus Mr. Bakewell, the celebrated cattle breeder, (a case mentioned by Dr. Whately,) "observed, in a great number of individual beasts, a tendency to fatten readily, and in a great number of others, the absence of this constitution. In every individual of the former description, he *observed* a certain peculiar *make*, though they differed widely in size, color, &c. Those of the latter description differed no less in various points, but agreed in being of a different make from the others. These facts were his data; from which combining them with the general principle, that nature is steady and uniform in her proceedings, he *logically* drew the conclusion that beasts of the specified make have universally a peculiar tendency to fatten: but then his principal merit consisted in making the observations, and in so *combining* them, as to *abstract* from each of a multitude of cases, differing widely in many respects, the circumstances in which they all agreed, and also in conjecturing skilfully how far those circumstances were likely to be found in the whole class: the making of such observations, and still more the combination, abstraction, and judgment employed, are what men commonly mean when they speak of induction."

2. Up to this point, Dr. Whately does not consider induction argumentative, nor does he admit it to be such until all the premises are discovered, and stated in argumentative form. On this point, almost trivial, we beg leave to differ from Dr. Whately. Induction, so long as it is merely discursive, as observing facts in the common way, and collecting them, but not to any specific purpose, nor to prove a property at that time not suspected to exist, is certainly not argumentative or logical. But the moment induction advances beyond this, though only on the presumption of the existence of a law, which may be predicated of the whole of any class, and is directed in such a way as to obtain all the premises of an argument, it is of the argumentative character, conducted on the persuasion that such an argument may be completed. The first observation of Mr. Bakewell, for example, in the first cases might be casual, wherein nothing either of the incipient or complete argument could exist. But when these cases began to multiply and arrest his notice, it led to the presumption, 1st, that there was a distinct species of cattle easily fattened; 2dly, that such and such marks distinguished that species. Consequently with these two premises, though then presumptive, Mr. Bakewell appears to have proceeded, and that with the view to establish these two facts, that the argument might be then conclusive in his own mind; that is, he proceeded argumentatively, and with a view to establish an argument, from which point his induction was of the argumentative character, though no argument was yet completed, as much as an embryo is a being, before it is a being of the same kind at maturity. And Mr. Bakewell's induction from that point was the embryo of the following syllogism.

There is a distinct species of cattle easily fattened.
Such and such marks distinguish that species.
Those having those marks are easily fattened.

3. If of a young student in chemistry it were inquired, "have all neutral salts qualities different from those of *either of the simples composing them?*" he would, if deprived of all other means of knowing this to be a fact, proceed first by induction. After he obtained from the examination of a few, presumptive testimony, to establish complete evidence, he would probably proceed,

First, with the *nitrates;* and having obtained the several individuals of this species, as the nitrate of potassa, the nitrate of soda, the nitrate of ammonia, the nitrate of silver, &c., and finding by *induction* that each and every one had qualities

distinct from *either of the simples composing them*, he could then predicate, by *syllogistic* reasoning, this property of this species of the genus, *neutral salt*.

Secondly. He would then proceed to the sulphates; as to the sulphate of potassa, of soda, lime, magnesia, iron, &c., and his induction being completed, he could then predicate by syllogism of this species of the genus neutral salt.

Thirdly. To complete his induction, and to arrive ultimately, through the several species, to their genus, *a neutral salt*, as originally proposed, he must now proceed consecutively with the remaining species, viz. with the *chlorates, carbonates, acetates, fluates, phosphates, prussiates, oxalates, chromates, borates*, &c., and the results by induction being the same, he may sum up the whole, by a syllogistic conclusion, predicating that neutral salts have *qualities distinct from either of the simples composing them*.

4. From this view of the subject it appears, *First*, that induction is the reverse of syllogism. Induction proceeds from particulars to a universal, or to a universal of any kind containing particulars composing and completing it; as from INDIVIDUALS to a *variety*; from VARIETIES, or class, to a *species*; from SPECIES to a *genus*; from GENERA to a *tribe*; from TRIBES to an *order*. On the contrary, syllogism proceeds from universals of any kind to particulars, as from an ORDER to a *tribe*, from a TRIBE to a *genus*; from a GENUS to a *species*, from a SPECIES to a *variety*, or from a VARIETY, or any other UNIVERSAL, to an *individual*, provided that those particulars are contained within what is predicated of their universal.

Secondly. It appears that induction and syllogism together, make up a complete system of argumentation. We cannot always proceed by syllogism, that is, when the universal is not known, nor what may be predicated of it, but the knowledge of this may be obtained by induction, by examining its particulars. But when this is known, induction is unnecessary, we proceed by syllogism; or syllogism sums up, concisely and argumentatively expresses in three lines, a volume of the labors of induction. Induction is, therefore, the pioneer for syllogism. Syllogism relieves induction of its toil.

Thirdly. The rank of *priority* is doubtless due to induction; that of *completion* and *certainty* to syllogism. In early ages, before universal natures were known, men would arrive at them by the patient investigation of particulars by induction. The process would begin with presumption, or with a presumptive conclusion as to a supposed or real universal

founded on partial testimony, and probably at a lower grade still, with discursive until it advanced to argumentative induction. The latter would proceed through various degrees of probable testimony, gradually approximating to complete evidence; and throughout the whole of this some degree of uncertainty would attach to the process. But the moment it attains the point of certainty, induction has discharged its honorable office. Syllogism itself is indebted to it for the *information* it has afforded, and even for its own material. The universal is now known, and what may be predicated of it, and every premiss necessary to the construction of an argument, is no longer presumptive. Syllogism memorializes the whole, and in a synoptic form, in the miniature compass of three lines, and by a conclusion deduced from premises no longer presumptive, forces conviction on one not capable of tracing such connexion through the several steps of a long induction.

Fourthly. Thus it may be perceived, that throughout the whole of the period of the *allowable existence* of induction, it is a presumptive conclusion from probable testimony as to the universal. But syllogism *need not* be employed except to deduce a conclusion from premises of certainty. That is, induction is an argumentative process within the limits of probable testimony; syllogism is an argument expressive of certainty from complete evidence. On this account, partly, Dr. Whately denies that induction is an argument until it can be expressed syllogistically, or when the universal and its predicate are known; but at this point precisely it is unnecessary as an argument, would be inconvenient, and properly ceases to be one. We do not contend that induction is an argument, but a process conducted on an assumption that argumentative principles exist, and therefore is within the precincts of what is argumentative, as much as twilight is within the precincts of the morning.

Fifthly. Truths, by Dr. Whately, very properly have been divided into TRUTHS OF INFORMATION, and TRUTHS OF INSTRUCTION. It is the office of induction to afford the former, that of syllogism to communicate the latter. Induction seeks a science, syllogism expresses it. Information supplies the material of instruction, instruction cannot exist without information. Induction and information, and syllogism and instruction are therefore correlatives. In short, induction and syllogism are the two luminaries during the night and the day of science.

5. Induction is the organon of Bacon, which he recommend-

ed as the means of acquiring truths of information, though many have erroneously imagined that he proposed to substitute it in place of the dictum of Aristotle, on which syllogism is founded. This is another testimony of the possibility of even successive generations, when misled by misrepresentation, existing even for centuries under a popular error. The functions of induction and syllogism are quite distinct, and it is impossible, with propriety, to substitute the one for the other. We agree with Dr. Whately that syllogism includes, or is, all reasoning, and consequently in this sense includes induction. It does so in the view we have taken; induction is the incipient syllogism, syllogism expresses the complete induction. Induction begins with assumed premises *syllogistically conducted* till probable testimony amounts to evidence, and induction at maturity arrives at syllogism.

6. From the following example will be perceived what premiss is commonly suppressed in the inductive process, and likewise the comparative length, when the cases are only seven between it and the syllogistic expression.

Cloven feet belong to the ox, a horned animal,
Cloven feet belong to the sheep, a horned animal,
Cloven feet belong to the deer, a horned animal,
Cloven feet belong to the goat, a horned animal,
Cloven feet belong to the antelope, a horned animal,
Cloven feet belong to the elk, a horned animal,
Cloven feet belong to the ibex, a horned animal.

If this completes the inductive process we arrive at the major premiss, until this suppressed and doubtful, viz:

"A property which belongs to the ox, sheep, deer, goat, antelope, elk, ibex, &c. belongs to all horned animals."

Having obtained this major, the syllogism may be completed, thus—

A property belonging to the ox, sheep, deer, goat, antelope, elk, ibex, &c. belongs to all horned animals.
Cloven feet is a property belonging to these; therefore
Cloven feet is a property belonging to all horned animals.

7. Induction, is derived from the Latin word, induco, *to bring in*, and therefore induction properly signifies a bringing in, one by one, all the particulars of the universal, as in this case, the ox, the sheep, the deer, &c. in order to ascertain, if what is predicated of one, may of the whole species or genus.

Section 2.

ON ANALOGY.

(Art. 126.) Analogy is a presumptive inference from the resemblance of a particular or universal of one kind more known, to the particular or universal of another less known, that a property existing in the former exists in the latter.

1. Analogy is seldom employed except in the absence of more certain premises for reasoning. It proceeds on the presumption that in consequence of a similarity, in the mode, constitution or circumstances of an individual, or individuals, of one class, with which we are more acquainted, to those of another class, with which we are less acquainted, that some property known to belong to the former, may also belong to the individuals or class less known. It is, therefore, a process of deriving a presumptive conclusion from presumptive premises in the absence of anything more certain. Analogy, however, may by various degrees approximate towards a conclusion of strong probability. This may be illustrated in the following manner.

2. A has a property, which call x; but this property may depend on its constitution or circumstances which consist of the parts, a, b, c, without the addition of any other. B's constitution consists of the parts a and b, *wanting* c, without that defect, however, being known; C's constitution is composed of b, c, wanting a, but with the addition of e; D's constitution is a, b, c, d; and E's is precisely A's, viz: a, b, c, without that identity being known, and they stand thus:

The constitution of

A is a, b, c,
B is a, b,
C is b, c, e,
D is a, b, c, d,
E is a, b, c.

And the argument from presumed or partially known premises, will stand thus:

All beings of A's constitution, have A's property, which is x,
B, C, D, E are of A's constitution: therefore
B, C, D, E have the property of A, which is x.

The major is not denied, the minor is, it is presumed, not known, and when examined turns out to be true only as to a part of it, i. e. as to E whose case is that of A; and the above on presumed premises may be reduced to the following, where nothing is denied and the conclusion certain:

All beings of A's constitution have the property x,
E has A's constitution; therefore
E has the property x.

The property x, however, may be more or less found in B, C, and D, though not in the same degree, or with the same modifications as in A or E, according to something either defective or redundant in their natures not applying to the case of A.

2. But how does this apply in medicine. The physician applies a remedy to A and to E, and in both cases succeeds; and likewise to B, C and D, who *apparently* are persons of the same structure and organization; yet there is either something defective in the one or redundant in the other, of which the physician, not being omniscient, knew not; his best efforts, therefore, reasoning by analogy from the case of A and E, are more or less opposed, according as the difference, whatever it be, more or less agrees with the medicine exhibited.

3. What we now call comparative anatomy, seems to have been the first process, at least amongst certain nations, by which we have arrived at our present knowledge of the structure of man. It was the process of analogy, and conclusions more or less perfect were obtained from it, which ultimately led to those of greater precision and certainty. To analogy, though we trust to it as little as possible, we owe many obligations, without being thankful for past favors. We would hope that there is always something in man averse to cutting up other men even when dead, and much more to injuring the living subject to explore the mysteries of the vital machine. Comparative anatomy, therefore, was a more agreeable process at least to delicate feelings. Here is an animal, an organized being once capable of life and motion, which by dissection we find to have these parts, thus and thus situated. Man is such a being; therefore man has these parts thus situated. Thus was their analogy producing a conclusion, partly right, and partly wrong. The middle term, animal, is improper in the sense to which it is applied. The animal dissected was probably a quadruped, a bird or a fish; but man is neither; and therefore, since the minor is not contained in the middle, no conclusion of *certainty* follows.

4. But

A B C and D have all tried the business x, and have succeeded.
I intend to try the business x; therefore
I shall succeed.

I try, and fail! why? was the fault in the syllogism? Certainly; for first the little important I is neither A nor B nor C nor D, and therefore no part of the middle term; for one had more capital, another more skill, and I perhaps less management; and I find that I derived my conclusion from an analogy of a very remote character, since I was not even any part of the middle term.

5. But the law says

All that commit the crime x, with the aggravations *a*, *b*, *c*, shall die.
Z has committed the crime x, with the aggravations a and b; therefore
Z, shall die.

Not so; for Z is not in the middle term. It is true that there is a similarity in the crime defined, and that Z committed; but the want of the circumstance, *c*, in the latter, will save his life. The want of c throws him out of the middle term, that thunders, "thou shalt die."

6. But the law also declares that the punishment for the crime Y is imprisonment for life; and Z is charged before the court for the commission of Y. But the definition of Y in the statutes is ambiguous, or such as to admit of more meanings than one; and the questions become, 1, what is Y? 2, did Z commit Y?

No similar case having been decided in this country, the only mode practicable is analogy, or reasoning from the definition of Y in another country, whose circumstances are similar to ours; or if that definition, as in our case, be defective in the statute book, the reasoning must be from the way in which it is understood in the courts of that country. Thus in the case of L, the court in that country decided that the three circumstances, *a*, *b*, *c*, were necessary to Y as contemplated by the law. In the case of B, the essentials were decided to be *a b*. So also in the case of F. Two cases, therefore, against one, contend that the two circumstances only, *a*, *b*, constitute the crime Y; Z did these, and therefore committed Y, whose definition is determined by analogy to be *a*, *b*.

7. Reasoning from analogy is not always considered as argument, but implies motive and illustration involving argument from premises whose force is often sooner felt than understood. It may be termed reasoning, not argumentation. Analogy on many occasions is improper, but many are the

cases wherein it is proper and useful. It is *inference* from *resemblance*. If that resemblance be slight or remote, or the circumstances in whatever is essential to the inference not parallel, analogy is improper; as, for example, the mind in suspense has been compared to a balance in a state of equilibrium. The analogy here is improper, for what determines the balance is mechanical; but what determines the mind is intellectual.

8. Analogy is frequently employed for a didactive purpose, especially as to children and minds not familiar with abstract truth. It employs visible symbols, allegories, metaphors, allusions easily understood, to teach and illustrate what is less known from some resemblance between them. It contains an implied argument whose force is readily perceived. The greatest Teacher employed this method. "Behold the fowls of the air, for they sow not, neither do they reap, nor gather into barns; yet your heavenly Father feedeth them. Are ye not much better than they? Consider the lillies of the field," &c. Here is an argument from analogy. Will a farmer take care of that part of his stock which is of little value, and will he not take care of that which is of greater? If men, if common sense act thus, will not Providence? The minds of most to whom his discourses were addressed, were in a state not otherwise equally capable of understanding and appreciating the truth and spirituality of his doctrines. He chose this method, and this evinced his intimate acquaintance with human nature. "If I have told you *earthly* things and ye believe not, how shall ye believe if I tell you of *heavenly* things?" Analogy begins, therefore, with earthly things, the A, B, C of Christianity, and then ascends to the mysteries into which "angels desire to look;" "what eye hath not seen, what ear hath not heard, and what hath not entered into the heart of man to conceive"—"the heavenly things"—prepared for those that "love HIM."

9. Analogy is also employed after argumentation, not because the latter is insufficient, but because there are some that are disposed to understand and believe the former, when they are not the latter. Hence Butler wrote his Analogy of Natural and Revealed Religion, not because the direct evidence of *Revealed Religion* was not more than sufficient to produce conviction in all rational minds willing to read, investigate and understand, but because many are disposed to begin first, if ever they begin at all, with the volumes of *Natural Religion*. And the things analogous in Nature and

experience lead us to the same conclusions more immediately and directly declared by revelation.

10. By analogy, the naturalist or philosopher is enabled to continue his travels to the utmost bounds of reasonable inference, or of what an elegant writer terms verisimilitude, but where sense cannot follow; whilst in the ANIMAL kingdom, *Cambray, Nieuwentyt, Derham, Bonnet, Buffon,* and *Swammerdam;* in the VEGETABLE, *Tournefort* and *Linne;* in the MINERAL, *Theophrastus, Werner, Klaproth, Cronstedt, Morveau, Reaumur, Kirwan, Stahl, Lavoisier, Fourcroy* and *Davy;* and in the motions of the HEAVENLY BODIES, *Copernicus, Kepler, Newton, Halley* and *Herschell,* have observed that nature acts with uniform and consistent laws, and that those laws always point to nature's God; he, in common with them, by analogy from the things that are seen, infers that in the fields of ether yet unmeasured by Herschell's telescope, this law, this uniformity, this testimony and evidence prevail.

11. No great mind exists without occasional excursions to regions so sublime. We are yet within the precincts of analogy, or of reasonable inference from known and visible resemblance, and are unwilling therefore to yield the whole of this to the creative fancy of the poet, but within the limits of inference almost irresistible, with Dr. Reid exclaim, "We observe a great *similitude* between this earth which we inhabit, and the other planets of this system. They all revolve round the sun, as the earth does, though at different distances, and in different periods. They borrow all their light from the sun, as we do. Several of them are known to revolve round their axis, like the earth, and by that means must have a like succession of day and night. Some of them have moons, that serve to give them light in the absence of the sun, as the moon does to us. From all this similitude, it is not unreasonable to think, that those planets may, like our earth, be the habitation of various orders of living creatures."

12. We need not, however, stop here. This is but one solar system, and however great to us, who are finite, to the universe, which is infinite, nay to that galaxy of which we are a part, it is but a point. We cease, therefore, to contemplate single systems, and with Herschell, view galaxies, aggregates of systems, probably each like our "via lactea," or milky way, a grand celestial chain of systems that no finite mind can grasp, but whose myriad suns have, doubtless, each like ours, their own systems, with planets revolving around

them. Herschell considers our galaxy but one of the many, the countless aggregates of systems that compose the universe. He directs our attention to one, to another, and to many distant beds of light; and by his telescope, they appear each a congregation of suns. We are yet within the limits of mortal vision, and by analogy infer, if this be the case so far as our own view can reach, why not throughout the universe. A universe composed of aggregates, an aggregate composed of systems, a system composed of planets, a planet peopled by intelligence. No one attempts to prove it by direct argument; it is infered by analogy, from known resemblance, confirmed, so far as it can go, by observation, and compatible with the views we would form of infinity. A finite agent produces a finite work, but an infinite agent an infinite work; above, below, on this side, on that, one vast unbounded universe of being and created intelligence, of which no finite mind can form an idea, but is comprehended by Him who comprehends all, Himself comprehended by none. He has a name that no man can spell, and whilst He is the creator of suns, is, himself, the sun of suns, the fountain of every thing excellent, and therefore so comprises within himself, all excellencies, and every thing amiable, that not any word, nor all the words, in any, nor in all languages, can express. And is not He, therefore, who comprises all excellencies, and every thing amiable within himself, and consequently every thing excellent or that can be loved at all, the proper object of reverence, adoration and love, to you, to me, to all? Life is too short to do any thing else than to love Him who comprises all excellencies in ONE, and without whom nothing is excellent. "To whom," therefore, "shall we go, THOU alone hast the words," (the EXCELLENCIES) "of ETERNAL LIFE."

INTERROGATORY EXAMINATION,

ON

CHAP. I.

Q. 1. What is your definition of induction? Art. 123.

Q. 2. How many kinds of induction are there? 123.

Q. 3. What is discursive induction? 124.

Q. 4. What is argumentative induction? 125.

Q. 5. How does induction differ from syllogism? 125, note 4.

Q. 6. When you are in search of some new truth, or TRUTHS OF INFORMATION, in the investigation do you employ induction or syllogism? 125, notes.

Q. 7. To what TRUTHS OF INFORMATION, or TRUTHS OF INSTRUCTION, is the syllogism adapted? notes.

Q. 8. When from premises, the truth of which is known, you deduce a truth of instruction, contained in them, though not perceived, but yet infered from them, do you employ induction or syllogism? 125, notes.

Q. 9. What is analogy? 126.

Q. 10. In what cases is analogy employed? 126, note.

SECTION III.

ON ARGUMENTS.

CHAP. I.

On the Nature, Parts and Rules of Syllogism.

(Art. 127.) A PREMISS is a proposition employed in argument or syllogism: every syllogism contains two, of which the first* is the MAJOR PREMISS, the second the MINOR PREMISS; these two are the PREMISES by which the last proposition of the syllogism, or CONCLUSION, is proved; as

Major premise. An effect without a cause is an absurdity.

Minor premise. Chance, in the sense of the atheist, is an effect without a cause.

Conclusion. Chance, in the sense of the atheist, is an absurdity.

(Art. 128.) AN ARGUMENT is that expression by which from PREMISES granted or proved to be true, a CONCLUSION results as their necessary consequence.

1. In this sense an argument is an expression of that portion or quantity of reasoning *generally* as may be comprised and expressed within three propositions; and it is that expression to which every thing that is reasoning may be reduced. Every thing that is not reasoning, however it may *appear* as such, when reduced to this, is reduced only to be exposed. If there be any thing more of reasoning than can be thus expressed in three propositions, it implies more acts of reasoning than one. An argument expresses one act of reasoning and no more. In common language it is sometimes taken for argumentative discourse which may occupy a whole volume; as when we speak of "Warburton's *Argument* to prove the divine legation of Moses."

2. "Reason" is that faculty by which the reasoning process is conducted. Reasoning is the act of reason. In common

* i. e. when the syllogism is regularly stated.

language, the word "reason" is sometimes used to signify reasoning. (Whately's Logic, p. 279.) Reasoning is sometimes employed to mean, not only its own direct act or operation, but also all those mental processes necessary to that act; thus the mathematician not only has to demonstrate, but *to exercise his skill in the judicious selection* of the proper materials for his argument; in like manner, the naturalist or philosopher, before he establishes the principle or science it is his object to prove, has frequently to employ, as in induction, *assumed premises, select and combine facts,* and by *abstraction* separate or take off that unsuitable to his purpose, that he may contemplate that, and that only, which is suitable to his selection, and the mode of proof he intends to pursue. The whole of this, and whatever other mental process is necessary, as well as the direct act, is frequently included in the general and somewhat vague word *reasoning*. In contradistinction to this, argumentation is employed in this work to signify the direct act of reasoning only. (See Art. 4.)

(Art. 129.) In every complete argument, *there are* three and *only* THREE TERMS: *two in the conclusion* called the EXTREMES; and these can neither be proved to agree nor differ, *without one* and only one *third term.*

1. For the meaning of a term, see Art. 8.

Third term or middle term.
All enslaved by appetite are not freemen.
The sensualist is enslaved by appetite.
1 2
The sensualist is not a freeman.

(Art. 130.) THE MINOR TERM is *the subject,* and THE MAJOR TERM the *predicate of the conclusion;* and the MIDDLE TERM is that with which each of them is separately compared.

1 Middle term.
A religion attested by miracles is from God.
The Christian religion is attested by miracles.
Minor term. Major term.
The Christian religion is from God.

2. The predicate of a conclusion is called the *major term,* because it is commonly *more comprehensive* than the *middle term:* it is so in the above example, for not only a religion at-

tested by miracles, but also animate and inanimate creatures are from God.

3. The minor term is so called because it is commonly less comprehensive than the *middle term*: it is so in the above case; for not only the Christian religion, but that typifying its future existence under the Mosaic economy, was attested by miracles: therefore the *middle* term, ("a religion attested by miracles") is more comprehensive than the *minor*.

(Art. 131.) The middle term must be such a universal term as to include the whole of the minor term.

1. In every syllogism regularly constructed, the middle term should be found in the major premiss. Syllogisms having the middle term distributed in the minor premiss should be reduced to regular form.

2. Consequently since the middle term should be a universal term, and in the major proposition, the major proposition should be universal: at least all syllogisms may and should be reduced to this form. Every middle term must represent some entire order, tribe, genus, species or class of persons or things, or else some attribute that may be predicated of the whole of such universal; and this entire class or universal must include the whole of the minor term. It is the only business of the minor proposition to assert this: if the minor proposition does not assert this, or it cannot be proved, the minor proposition is useless.

(Art. 132.) The minor term must be included in the middle term, not excluded from it.

1 All that understand Euclid are mathematicians.

A Creole understands not Euclid; therefore
A Creole is not a mathematician.

This is very plausible; and nothing is denied relative to the truth of each proposition, for propositions they only are, and no argument at all; since the minor term (*a Creole*,) is not included in the middle term, (*all that understand Euclid*,) but excluded from it, viz: "a Creole understands NOT Euclid." The most essential connection is, therefore, broken, and the *apparent* argument falls to the ground as useless. But bring the minor term, (a Creole) to his own class, or middle term, (all that understand *not* Euclid,) and the three disconnected propositions become an argument.

All that understand *not* Euclid, are not mathematicians,
A Creole understands not Euclid; therefore
A Creole is not a mathematician.

(Art. 133.) An argument contains only THREE PROPOSITIONS; TWO PREMISES in which the middle term is *compared with* the extremes; and THE CONCLUSION, in which the *extremes stand together.*

(Art. 134.) The MAJOR PREMISS compares the middle term with the major; the MINOR PREMISS the middle term with the minor; and the CONCLUSION, the minor with the major.

1. As,

	Mid. term.	*Major term.*
Major premiss.	Every effect	is the result of an adequate cause.
	Min. term.	*Mid. term.*
Minor premiss.	The world	is an effect; therefore
	Min. term.	*Major term.*
Conclusion.	The world	is the result of an adequate cause.

(Art. 135.) Whatever is predicated of a DISTRIBUTED MIDDLE, may be predicated in like manner of every thing contained in it.

1. By "predicated" here we are to understand "affirmed or denied," of the middle term, distributed. The distribution of the middle term is a subject we have already explained: first in the Analytical Introduction, (see page 36 to 42) and also in the Synthetic Compendium, (See Chap. IV. of propositions, page 96;) but the whole doctrine of distribution is expressed in the rule already mentioned, viz:

A distributes the subject, O the predicate, I neither, and E both.

2. This rule necessarily implies the following consequence,

(Art. 136.) Whatever is denied of a whole class excludes from that class every thing denied.

(Art. 137.) A perfect syllogism is an argument so expressed that the major term of the conclusion MUST BE predicated of its minor, IN CONSEQUENCE of that minor *being contained* in A DISTRIBUTED MIDDLE of which *the same major is predicated.*

Mid. term.

1. Every wicked man is miserable.

Every tyrant is a wicked man; therefore

Min. term. *Maj. term.*

Conclusion. Every tyrant is miserable.

To the above example, how does the above definition apply? The major term of the conclusion, (miserable) *must be* predicated of its minor, (every tyrant) in consequence of that minor term, (every tyrant) being contained, as the minor proposition asserts, in the middle term, (every wicked man,) distributed, (for A distributes the subject as marked,) of which the same major, (miserable) is predicated. This is the spirit of the syllogism, and nothing can be more simple than the principle it implies.

2. But of the following proposition, which is the predicate,

No wicked man is a happy man,

the term "wicked man" is the subject; the copula is always, "is" or "is not" or their equivalents, and the proposition is reducible to

"A wicked man is not a happy man."

The whole predicate therefore, "happy man," is predicated, i. e. here denied (by no or not) of the subject "wicked man."

No discontented man is a happy man.
Every wicked man is discontented; therefore
No wicked man is a happy man.

The definition equally applies, therefore, in the case of negative propositions; for here, the major term, of the conclusion, "happy man," must be predicated, i. e. here denied, of its minor, "wicked man," in consequence of that minor, "wicked man," being contained in, as the minor premiss affirms, the middle term, "discontented man," distributed; for "E distributes both;" of which the same major "happy man," is predicated, i. e. here denied.

3. The definition strictly applies to all syllogisms of a perfect character; all of the first figure, which is agreeable to Aristotle's general law, (Art. 135.) It applies also to the third figure. But since all syllogisms are reducible to the four moods of the first figure, which are called *perfect* moods, this is offered as a definition of a *perfect* syllogism only, the rest fall under the general definition of an argument, synonymous with a syllogism generally; (Art. 133.)

(Art. 138.) If two terms agree with one and the same middle term, they agree with each other.

(Art. 139.) If one term agrees, and another disagrees with one and the same middle term, these two disagree with each other.

1. On the former of these *Canons* rests the validity of affirmative conclusions; on the latter, of negative, for no absolute syllogism can be faulty which does not violate these canons, none correct which does. Hence, on these two are built the rules or cautions which are to be observed with respect to syllogisms.

2. We therefore make use of some THIRD TERM, in order to find whether the subject and predicate of a question agree. "It appears that every act of reasoning necessarily includes three distinct judgments; two, wherein the ideas, whose relation we want to discover, are severally compared with the *middle idea;* and a third, wherein they are themselves connected or disjoined, according to the result of that comparison. Now, as our judgments, when put into words, are called propositions, so our acts of reasoning, when expressed by words, are termed syllogisms. And hence it follows that as every act of reasoning implies three several judgments, so every syllogism must include three distinct propositions, and when an act of reasoning is thus put into words, and appears in the form of a syllogism, the intermediate idea made use of to discover the agreement or disagreement which we seek to investigate, is called the MIDDLE TERM, and the two ideas themselves, with which this third is compared, are called the EXTREMES."

3. "To illustrate this by an example, suppose that we have set ourselves to inquire, 'whether MEN *are* ACCOUNTABLE *for their actions.*' As the relation between the ideas of *man* and *accountableness* comes not within the immediate view of the mind, our first care must be to find out some third idea that will enable us to discover and trace it. A very small measure of reflection is sufficient to inform us that no creature can be accountable for his actions, unless we suppose him capable of distinguishing right from wrong, i. e. unless we suppose him possessed of reason. Nor is this alone sufficient; for what would this capability of distinction avail him, if he had no freedom of choice, and could neither avoid the one nor pursue the other? Hence it becomes necessary to take both these considerations in the present case. It is at the

same time equally evident, that wherever there is this ability of discrimination and of choice, there also a creature is accountable. We have then got a *third idea* or *middle term*, with which *accountableness* is inseparably connected, viz. the idea of *a creature possessed of reason and liberty.*"

4. "Let us now take this third or middle idea, and compare it with the other term in question, namely *man*, and we all know by experience that it may be affirmed of him, viz. that he is a creature possessed of reason and liberty. Having thus, by means of the intermediate idea, formed two several judgments—that man is possessed of reason and liberty, and that reason and liberty imply accountableness, a third obviously and necessarily follows, that man is accountable for his actions. If now we put this reasoning into due form, it exhibits what logicians call a syllogism; thus

Every creature possessed of reason and liberty, is accountable for his actions.
Man is a creature possessed of reason and liberty; therefore
Man is accountable for his actions."—*Duncan.*

THE RULES FOR SYLLOGISMS.

(Art. 140.) RULE I. Particular propositions are contained in universals, and may be infered from them; but universals are not contained in particulars, nor can be inferred from them.

1. Consequently the middle term should be one of the terms of a universal proposition, and the minor should be contained in it. Mr. Hedge observes, "the major proposition must always be universal, but may be either affirmative or negative and the minor proposition must always be affirmative, but may be either universal or particular. The conclusion may be either a universal affirmative, or universal negative, a particular affirmative, or a particular negative. In every regular syllogism the major proposition is placed first, the minor next, and the conclusion last." Again, the middle term is so called "because its extension is less than that of the major, and greater than that of the minor term. This circumstance proves the natural situation of the middle term to be that of subject in the major premiss, and of predicate in the minor; since the predicate of a proposition is never less, but usually more general than the subject."

2. The predicate of a universal proposition is taken in no

greater extension than its subject, and *the predicate of a negative is always taken universally, for in its whole extension it is denied of the subject;* for if we say no stone is a vegetable, we deny all sort of vegetation concerning stones. The example given on page 99 note 14, illustrates the former case, and the proposition, "no bird is a quadruped," the latter; for the term quadruped throughout its whole extension, whether elephant, camel, horse, or any thing else having four feet, *essential* to the character of quadruped, is denied of the subject bird.

3. Mr. Hedge's remarks quoted in note 1, apply to all syllogisms regularly constructed. We shall meet, however, with others differently formed; they are, however, irregular, and should be reduced to the formula of a perfect syllogism, as defined in Art. 136.

(Art. 141.) RULE II. An equivocal middle term proves nothing. For this is not one and the same third.

1. An equivocal term is such as, *a foot*, which may signify either the foot of an animal, or a measure; so the word *light* either signifies that which emanates from a luminous body, as the *light* of the sun; or (light the adjective) *not heavy;* the effect of such an equivocal term, may be thus exemplified,

> "*Light* is contrary to darkness.
> Feathers are light; therefore
> Feathers are contrary to darkness."

The term *light* is ambiguous or equivocal, and is either a noun or an adjective. It is employed, in the above example, as a noun in the major proposition, as an adjective in the minor, i. e. two middle terms, or not one and the same third, contrary to Art. 137; and the syllogism has four terms, contrary to Art. 129.

(Art. 142.) RULE III. An undistributed middle is equivocal; therefore the middle term must be distributed in one of the premises.

1. If the middle term be taken for two different parts or kinds of the same common term, which would be equal to two middle terms, then the extremes in the conclusion, (i. e. the minor and major terms) not having been compared to the SAME THIRD, could not, in the conclusion, be compared to each other. Therefore, *the middle term must not be taken twice particularly, but once at least universally.* If not there will

be two extremes and two middle terms, four in all, contrary to the canon. Should we say, "some men are pious," and "some men are robbers," we can never from this infer that "some robbers are pious." The premises of this example are particular affirmatives, or I, and "I distributes nothing;" the middle term, therefore, "some men," is not distributed in either of the premises; but on the contrary is taken *twice particularly;* so that the term "some men" does not mean the same men in the one as it does in the other premiss: hence here are two middle terms, not ONE AND THE SAME THIRD. Aristotle's general law has nothing to do with any thing of this kind.

2. *Syllogistic reasoning*, as Dr. Whately very properly observes, "*is all reasoning:*" that is, every thing *appearing* to be reasoning, not reducible to the form of the syllogism, nor standing the test of its rules, is not reasoning. To understand those rules, therefore, especially those relative to the distribution of the middle term, is important. If the middle term be undistributed, such conclusions as the following may be the consequence.

A. White is a color.
A. Black is a color; therefore
A. Black is white.

Gross as this untruth is, yet many exist whose chief business it is to persuade both themselves and others that black is white, and white is black, founded on premises no better than these. Here color is the middle term, and being the predicate of a universal, (all white) is undistributed; for A distributes the subject, of course not the predicate. Color being undistributed, is taken twice particularly, no where universally, meaning a part of one property in one premiss, another part in the next, consequently two middle terms; thus an undistributed middle, a common case in specious reasoning, may prove that "black is white."

I. Some animals are beasts.
I. Some animals are birds; therefore
I. Some birds are beasts.

This false conclusion is also the result of an undistributed middle. The middle term here is "animals." All the propositions are I; and "I distributes neither," subject nor predicate; one part is taken in the major premiss, and another in the minor; with the same consequence, two middle terms: of

course nothing is proved, except the necessity of distributing the middle, which if not done, an error, frequently undiscovered, may run through a volume.

3. The rule says, "the middle term must be distributed *in one* of the premises;" i. e. by being the subject of a universal, or the predicate of a negative. This is always determined by considering whether the premiss is A, O, I or E, since according to the rule which must be kept in mind, "*A distributes the subject, O the predicate, I neither, and E both.*" If the middle term be distributed in one of the premises it is enough, since if one extreme has been compared to a *part* of the middle term, and another to the *whole* of it, they must have been both compared to the *same* third.

4. It is therefore not sufficient for a middle term to occur in a universal proposition; for if that proposition be an affirmative, ("A distributes the subject,") and the middle term the predicate of it, it will not be distributed: (see the first example quoted in note 2.) If, however, one of the premises be negative, E or O, the middle term may be made the predicate of that, and will be according to the above rule distributed; as,

E. No ruminant animals are predacious.

A. The lion is predacious; therefore
A. The lion is not ruminant.

(Art. 142.) RULE IV. No term must be distributed in the conclusion which was not distributed in one of the premises.

1. The contrary to this rule, or employing the *whole* of a term in the conclusion, of which only a *part* had been employed in the premises, is equivalent to the introduction of four terms, though with only one middle term, and this is called, an *illicit process either of the major or minor term;* as

A. All quadrupeds are animals.
E. No bird is a quadruped; therefore
E. No bird is an animal. Illicit process of the major.

2. We here find in the conclusion, 1st. the minor term "bird," distributed, as well as the major term "animal," for "E distributes both." But "bird" is distributed in the minor premiss, which is E, by the same rule. 2d. The major term animal distributed, in the conclusion which is not distributed

in any premiss; certainly not in the major premiss, where it is the *predicate*, for A distributes only the *subject*. It is therefore the illicit process of the major, distributed in the conclusion, and not distributed in any preceding premiss. There is however another irregularity in the above example, since the minor term, "bird," is not included in, but excluded from the middle term "quadruped," (art. 132.) rendering the whole not a perfect syllogism (art. 136.)

(Art. 143.) RULE V. Two negative or two particular premises, prove nothing.

1. "For in them the middle is pronounced to disagree with both extremes; not to agree with both; or to agree with one, and disagree with the other; therefore, they cannot be compared; as,

A fish is not a quadruped.
A bird is not a quadruped; proves nothing."

Therefore, in this case a third is brought, from which both terms differ.

2. So also in the case of two particular premises, where either the middle term will be distributed, or there will be an illicit process; as

I. Some animals are sagacious.

O. Some beasts are not sagacious.

O. Some beasts are not animals.

The middle term, "sagacious," is undistributed, "I distributes neither," and the minor term "beast" is excluded from, not included in the middle term; and the major term "animals" is distributed in the conclusion, since "O distributes the predicate," which was not distributed in the premises; it is likewise, therefore, an illicit process of the major term.

(Art. 144.) RULE VI. If either premiss be particular or negative; so is also the conclusion.

1. That is, if either premiss be particular, the conclusion is particular; if either premiss be negative, the conclusion is negative. "If the premiss be negative, the middle term is pronounced to disagree with one of the extremes, and in the other premiss, which is affirmative, to agree with the other extreme, therefore the extremes disagreeing with each other, the conclusion is negative. Consequently to prove a negative conclusion, one of the premises must be a negative."

2. And if either premiss be particular, so must the conclusion; as,

All the students that have passed the examination, will receive a diploma.
Some students have passed the examination.

From this it can only be infered, that some students, (not all,) will receive a diploma. For to infer in such case a universal conclusion, would be an illicit process of the minor.

3. Neither is it in every case possible to infer a universal conclusion from even universal premises; as,

All gold is precious.

All gold is a mineral; therefore
Some mineral is precious.

3. But even when we can infer a universal, we are at liberty to infer a particular; since what is predicated of all, may always be predicated of some of the same class.

4. According to the preceding definitions and rules, let the following syllogisms be examined:

A. Whatever is an enemy to truth is an enemy to man.

A. Scepticism is an enemy to truth; therefore
A. Scepticism is an enemy to man.

First. By the definition, Art. 136, the above is a perfect syllogism, for the major term, (an enemy to man,) *must be* predicated of the minor term, (scepticism,) consequent on the minor term being *contained* in the middle term, (whatever is an enemy to truth,) of which the same major term (an enemy to man) is predicated.

Secondly. The middle term, (whatever is an enemy to man,) is distributed according to Rule III., since it is the subject of the proposition A, and "A distributes the subject."

Thirdly. The only term distributed in the conclusion, is the subject, "scepticism," of the proposition A, which is distributed, according to the Rule, "A distributes the subject;" and this term is distributed in the minor premiss, according to the same Rule; it is therefore distributed in one of the premises, according to Rule IV.

Fourthly. It contains not either two negative nor two particular premises, according to Rule V. and its conclusion is universal and affirmative, for neither of its premises is particular or negative, according to Rule VI.

5. This may serve as an example of logical analysis, to show that it would be considerably more easy to introduce and practice logical parsing in schools, than the parsing of

Greek, Latin, or English, according to the grammars of those languages, since all the necessary rules are few, easily learned and retained in memory; whereas, grammar rules relative to etymology, syntax and prosody, are numerous, and, as grammars are commonly written, prolix and verbose, and are not, without much practice, easily retained.

6. The learner may exercise his knowledge of the rules by the analysis with the following example:

A. All who wish to propagate error, dislike logic.
A. "Children of the mist" wish to propagate error; therefore
A. "Children of the mist" dislike logic.

INTERROGATORY EXAMINATION

ON

CHAP. I.

Q. 1. What is a premiss? Art. 127.
Q. 2. What is the first premiss contained in an argument called? 127.
Q. 3. What is the second premiss called? 127.
Q. 4. What are the two called? 127.
Q. 5. What are premises? 127.
Q. 6. What is the conclusion? 127.
Q. 7. What is an argument? 128.
Q. 8. How many terms does a complete argument contain? 129.
Q. 9. What is the minor term? 129.
Q. 10. What is the major term? 129.
Q. 11. What is the middle term? 129.
Q. 12. What should be the character of the middle term? 131.
Q. 13. Should the minor term be included in, or excluded from the middle term? 132.
Q. 14. How many propositions does an argument contain? 133.
Q. 15. What is the major premiss? 134.
Q. 16. What is the minor premiss? 134.
Q. 17. What terms are compared together in the major premiss? 134.
Q. 18. What terms are compared together in the minor premiss? 134.
Q. 19. What terms are compared together in the conclusion?* 134.

* This, or the third proposition of the syllogism, is sometimes called, before it is proved, the *question*, afterwards the *conclusion*.

Q. 20. Repeat the general law of syllogism, commonly called "Aristotle's dictum." 135.

Q. 21. What is the definition of a perfect syllogism?* 136.

Q. 22. If two terms agree with the same middle term, what is your inference? 137.

Q. 23. If one term agrees, and another disagrees with one and the same middle term, what is your inference? 138.

Q. 24. What are called the extremes of a syllogism?

Q. 25. In what proposition do the extremes stand together?

Q. 26. What is the first rule relative to the correct construction of a syllogism? 139.

Q. 27. What is the second rule? 140.

Q. 28. What is the third rule? 141.

Q. 29. What is the fourth rule? 142.

Q. 30. What is the fifth rule? 143.

Q. 31. What is the sixth rule? 144.

Q. 32. Prove that you remember what A distributes.

Q. 33. What does E distribute?

Q. 34. What does I distribute?

Q. 35. What does O distribute?

Q. 36. Prove your knowledge of this by analyzing or parsing the syllogism given under Art. 144, note 6, and show whether it is true or false, according to the rules.

CHAP. II.

On the Moods and Figures of Syllogisms.

INTRODUCTORY REMARKS.

1. It will be impossible correctly to understand and practise the subject of this chapter, without the recollection of a rule already given, (Art. 69, 2) relative to the signification of the four symbols, which logicians invariably employ to designate the character, as to quality and quantity, (Art. 94, Rule 5, note 3, and Rule 6, 7, 8, 9,) of the four principal propositions to which all are reducible: viz: *A always signifies a universal affirmative, E a universal negative, I a particular*

* From Συλλογισμος, reasoning; which is from Συλλογιζομαι, to reason; from Συν, together, and Λεγω, to say, select, count, infer.

affirmative, and O a particular negative. Which is easily remembered by the aid of the mnemonic lines given, (Art. 70) viz:

Universally, A AFFIRMS, and E DENIES.
Particularly, I AFFIRMS, and O DENIES.

2. It has already been intimated that all syllogisms either are or may be reduced to the four moods of the first figure, which is in strict conformity with the Aristotelian precept, "Whatever is predicated of a whole class, (a distributed middle,) may be predicated of anything contained in that class," when the four moods will be expressed by the four following associations,—

A. A. A. E. A. E. A. I. I. and E. I. O.

For example,

A. Every flower fades.
A. Every tulip is a flower; therefore
A. Every tulip fades.*

E. No flower is always in bloom.
A. Every rose is a flower; therefore
E. No rose is always in bloom.

A. All flowers are beautiful.
I. Some things deciduous are flowers; therefore
I. Some things deciduous are beautiful.

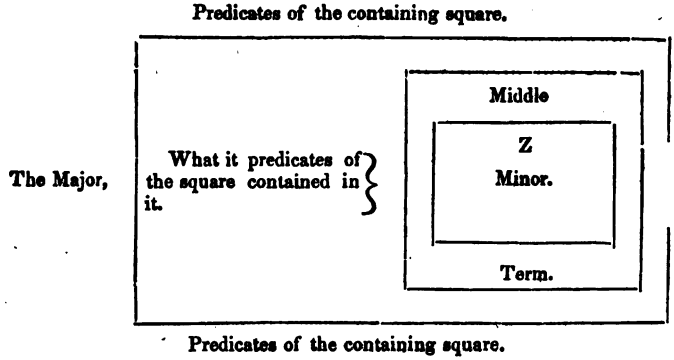
E. No star is dark.
I. Some unseen are stars; therefore
O. Some stars unseen are not dark.

3. According to one of these four moods, viz: A. A. A.; E. A. E.; A. I. I.; E. I. O.; we may always construct our own syllogisms. In short they appear to be consistent with the usual order of thought, and doubtless are, with the definitions of a perfect syllogism, (Art. 136.) "*A perfect syllogism is an*

* Let it not be supposed, in consequence of syllogism being frequently selected, in logical treatises, of a short and simple character, that they often express only an obvious truth. Syllogisms are universal in their application, comprehending all subjects, whether of Divinity, science, of the arts, political economy, or of the general and common business of life; in short, a syllogism exists, expressed or implied, wherever such illative words, as *therefore, wherefore, consequently*, &c. rationally exists. But were selections, on every occasion made from the sciences, &c. they would not be so generally understood; whilst one of a short compass, expressed in a few words, though it contain an obvious truth, is not selected on that account, but that it might briefly express in a miniature compass, a general form, or be the fac simile to which all others of the same mood and figure, and on any subject, obvious or not, may be reduced.

argument so expressed that the major term must be predicated of the minor, consequent on that minor being contained in a middle term of which the same major is predicated.

4. Nothing can be more simple and obvious than this general and infallible law of reasoning: its simplicity is such that it may be even ocularly elucidated by a geometrical figure: e. g.



That is,

All squares are four-sided figures, having all their sides equal, and their angles right angles.

The figure z is a square; therefore

The figure z is a four-sided figure, having all its sides equal, and its angles right angles.

5. We may at least reduce *all our reasoning* to this simple and obvious character, the propriety and necessary consequence of which is evident to the understanding, and thus evident to the eye. We shall, however, meet with syllogisms of a different form, whether constructed such designedly or not; and the first process we should, in such case adopt, would we be successful opponents of an adversary, is to convert them into one of the four moods of the first figure in which a fallacy will be more clearly exposed. Hence the necessity of this chapter on the moods and figures of syllogisms, and of the next, containing the rules necessary for their reduction.

(Art. 145.) The mood of a syllogism is that order in which the characters of the propositions composing it succeed each other.

1. The character of a proposition is always denoted by

either A, E, I, or O. These are sufficiently expressive, and indicate all that it is necessary to attend to in this respect.

2. Since the major premiss may be either A, E, I, or O, and the minor be likewise either, or four times four, the variety in the premises may be sixteen; and since the conclusion is also capable of four variations, four times sixteen, or *sixty-four*, is the number of different ways in which A, E, I and O can combine in three propositions.

3. This, however, is a mere arithmetical calculation, without any regard to those logical rules, which reject fifty-three out of the sixty-four, leaving but eleven combinations, viz:—AAA, AAI, AEE, AEO, AII, AOO, EAE, EAO, EIO, IAI, OAO.*

(Art. 146.) The FIGURE of a syllogism is that position which *the middle term assumes with respect to the extremes.*

1. The extremes of a syllogism are always the minor and major terms, which become the extremes of the conclusion.

(Art. 147.) The middle term being the subject of the major, and predicate of the minor premiss, is THE FIRST FIGURE.

1. This figure is the most natural and clear of all; it is to this that Aristotle's dictum applies, and it is the peculiar excellency of this figure, that all questions may be proved by it, universal or particular, affirmative or negative; consequently to this all other figures may be reduced.

* The arithmetical combinations are AAA, AAE, AAI, AAO: AEA, AEE, AEI, AEO: AIA, AIE, AII, AIO: AOA, AOE, AOI, AOO: EAA, EAE, EAI, EAO: EEA, EEE, EEI, EEO: EIA, EIE, EII, EIO: EOA, EOE, EOI, EOO: IAA, IAE, IAI, IAO: IEA, IEE, IEI, IEO: IIA, IIE, III, IIO: IOA, IOE, IOI, IOO: OAA, OAE, OAI, OAO: OEA, OEE, OEI, OEO: OIA, OIE, OII, OIO: OOA, OOE, OOI, OOO.

But sixteen of these are excluded by the fifth Rule (Art. 143,) because their premises are negative, viz. EEA, EEE, EEI, EEO: EOA, EOE, EOI, EOO: OEA, OEE, OEI, OEO: OOA, OOE, OOI, OOO. Twelve by the same Rule, (Art. 143,) because their premises are particular, viz. IIA, IIE, III, IIO: IOA, IOE, IOI, IOO: OIA, OIE, OII, OIO. Twelve by the sixth Rule, (Art. 144,) because one of the premises is negative and not the conclusion, viz. AEA, AEI: AOA, AOI: EAA, EAI: EIA, EII: IEA, IEI: OAA, OAI. Eight by the same Rule, (Art. 144,) because one of the premises is particular and not the conclusion, viz. AIA, AIE: AOE: EIE: IAA, IAE: IEE: OAE. Four, because the conclusion is negative, but neither of the premises: AAE, AAO: AIO: IAO. To which must be added I, E, O, for an illicit process of the major in every figure.

Therefore fifty-three moods are excluded, many of which offend against several rules. There consequently remain eleven, which only are useful in syllogism, which are already quoted above.

(Art. 148.) The middle term being the predicate of both premises, is the SECOND, and the subject of both is the THIRD FIGURE.

(Art. 149.) The middle term being the predicate of the major, and subject of the minor premiss, is the FOURTH FIGURE.

1. This figure, in every respect, is the reverse of the first; and as that is the best, this is the worst, and most awkward; and merits stating only that it may be, as shall be hereafter shown, reduced to the first.

2. The proper order of a syllogism is to place the major premiss, or that which compares the middle term with the major first, and the minor premiss, or that which compares the middle term with the minor next.

3. If, in the following examples, each middle term is marked as usual with a double line, they will show that varied position of the middle term which constitutes, according to the preceding rules, the four figures of syllogism.

1st Figure.

All flowers are beautiful.

Some things deciduous are flowers.

Some things deciduous are beautiful.

2d Figure.

Every flower is deciduous.

No evergreen is deciduous.

No evergreen is a flower.

3d Figure.

All flowers are beautiful.

Some flowers are deciduous.

Some deciduous are beautiful.

4th Figure.

Every flower is deciduous.

Nothing deciduous is an evergreen.

No evergreen is a flower.

4. This varied position of the middle term is frequently represented symbolically, by letters. Only let Y, wherever found, signify the middle term, Z the minor, and X the major, and the four figures can be thus exhibited.

First Figure.	Second Figure.	Third Figure.	Fourth Figure.
YX	XY	YX	XY
ZY	ZY	YZ	YZ
ZX	ZX	ZX	ZX

"Between Y an X we may place either a negative or affirmative copula; and we may prefix either a universal or particular sign to Y. By applying the moods thus to each figure, it will be found that each figure will admit six moods only, without violating the rules against undistributed middle, and against *illicit process;* and of the moods so admitted, several, though valid, are useless, as having a particular conclusion, when a universal might have been drawn;" as

A. Every wicked man is miserable.
A. All cruel men are wicked men; therefore
I. Some cruel men are wicked men.

Which admits of a universal, therefore, in the first figure, A, A, I, is useless, and for the same reason E, A, O.

(Art. 151.) The mnemonic line for the four figures, is *subpre, twicepre, twicesub, presub.*

1. The above four mnemonic words should be carefully committed to memory. They are easily understood, and refer, of course, to the premises, and not to the conclusion of a syllogism. The first SUBPRE intimates that the middle term is first the subject, then the predicate; and as the same term cannot be both subject and predicate of the same proposition, it will be first the subject of the major, and then the predicate of the minor premiss. TWICEPRE intimates that, in the second figure, the middle term is first the predicate of the major, and then the predicate of the minor premiss. As a similar explanation applies to the other two words, their meaning is sufficiently evident; they will be easily remembered, and found to contain "multum in parvo."

2. "Each of the allowable moods mentioned above, (Art. 145, 3) will not be allowable in every figure; since it may violate some of the foregoing rules in one figure, though not in another: e.g. I A I, is an allowable mood in the third figure, but in the first it would have an *undistributed middle.* So A E E, would in the first figure have an *illicit process of the major*, but is allowable in the second; and A A A, which in the first figure is allowable, would in the third have all *illicit process of the minor.*

3. *Because of an undistributed middle*, the first figure excludes two moods, I A I; and O A O: the second four, A A A; A A I; A I I; I A I: and the fourth two, A I I, and A O O.

Because of the illicit process of the major term, the first figure excludes four moods, A E E; A E O; A O O; I E O;

the second two I E O ; O A O; the third four A E E; A E O; A O O, and I E O; and the fourth two, I E O ; and O A O.

Because of the illicit process of the minor term, the third excludes two A A A; E A E; and the fourth two, A A A and E A E.

The following are also rejected as useless, *because of a particular conclusion when a universal might be drawn ;* viz: the first figure, on this account, rejects A A I; and E A O; the second E A O; and A E O; and the fourth, A E O.

4. There remain then nineteen moods; *four in the first figure; four in the second; six in the third; and five in the fourth.*

5. This statement of the several causes on account of which the above are rejected will be useful, for as they are *possible,* though not *allowable* combinations, we shall by reference to this enumeration, whenever they occur, be enabled by it, as well as by the rules, to say on what account they are improper or inconclusive, i. e. whether on account of, 1. *An undistributed middle;* 2. *The illicit process of the major;* 3. *The illicit process of the minor, or* 4. *On account of resulting in a particular conclusion, where a universal might be drawn.*

(Art. 151.) The four figures comprise nineteen regular moods.

(Art. 152.) The mnemonic lines of the nineteen moods are.

Figure 1. Barbara, Celarent, Darii, Ferio.
Figure 2. Cesare, Camestres, Festino, Baroko.
Figure 3. Darapti, Disamis, Datisi, Felapton, Bokardo, Feliso.
Figure 4. Bramantip, Camenes, Dimaris, Fesapo, Fresison.

1. These mnemonic lines will be found, in practice very convenient; since in a few words, easily retained in memory, they not only comprise the nineteen moods, and indicate in what figure each *allowable* mood is found, but by their initial consonants, B C D F, (and no other *initial* consonant is found,) show to what mood in the first figure, as will be explained in the chapter on reduction, any of the remaining fifteen moods, may be reduced. Again, no other vowel but A E I O is employed, which also signify the character of the three propositions composing each mood. Thus Barbara, or bArbArA is expressive of the first mood in the first figure, whose three pro-

positions A A A are three universal affirmatives. Camestres in the second figure, whose three propositions are A E E, and is reducible, as its initial consonant C declares to Celarent in the first figure: the use of the other letters composing these mnemonic words, and their several significations, will be shewn in the chapter on reduction. *These lines should be carefully committed to memory.*

2. By a careful inspection of them, it will be perceived, that the proposition A, can only be proved by the first figure; in which also conclusions E I O may be proved; that the second figure proves only negative conclusions; the third only particulars: that the first figure requires the major premiss to be universal, and the minor affirmative, &c.

3. It is somewhat amusing to observe, in what manner some, writers on Logic too, have been displeased with these lines: "Barbarous!" says one; "barbarous *Latin!*" says another. To suppose that they ever were intended for Latin, when very few words of the whole catalogue have that character, is certainly ingenious. A third contrives to keep them out of his book until the last sheet, when finding his mistake, he allows them to pass with a little abuse, but without any explanation of their service in reduction. "But cannot they be mended?" says a fourth; not knowing that as they stand, unmended, they are an excellent string of keys, so formed as to fit every ward, every varied sinuosity that fallacy, under the disguise of obscure mood and figure, has devised; and to reduce the whole to the condition of a perfect syllogism, where truth must be seen and error exposed. They are mnemonic terms. And mnemonics have been highly appreciated by all acquainted with the value of the art, at least from the time of Crassus, Seneca and Cicero. Of words similar to these we shall find abundance in the treatises on mnemonics either by Feneigle, Grey or Murden. But who on looking into these works, jingles the peals of his own misconceptions by exclaiming "barbarous," "barbarous Latin," "Hexameters," &c.; knowing that there is a utility in such artificial expressions, and that the greater in proportion to the more that for the memory can be expressed in a short compass.

4. Relative to the figures Dr. Whately makes the following remarks: "With respect to the use of the first three figures, (for the fourth is never employed but by an accidental awkwardness of expression,) it may be observed, that the first is that into which an argument will be found to fall the most naturally except in the following cases:—First, when we have

to disprove something that has been maintained, or is likely to be believed, our arguments will usually be found to take most conveniently the form of the second figure; viz: we prove that the thing that we are speaking of cannot belong to such a class, either because it wants what belongs to the whole of that class, (Cesare) or because it *has* something of which that class is destitute, (Camestres); e. g. "No impostor could have warned his followers, as Jesus did, of the persecutions they would have to submit to;" and again, "an enthusiast would have expatiated, which Jesus and his followers did not, on the particulars of a future state." The same observations will apply, *mutatis mutandis*, when a particular conclusion is sought, as in Festino and Baroko. The arguments used in the process "Abscissio Infiniti,"* will in general be the most easily referred to this figure. The third figure is, of course, the one employed when the middle term is *singular* since a singular term can only be a subject. This is also the form into which most arguments will naturally fall that are used to establish an *objection*, (Enstasis of Aristotle) to an opponent's premiss, when his argument is such as to require that premiss to be universal. It might be called, therefore, the enstatic figure, e. g. if any one contend that "this or that doctrine ought not to be admitted because it cannot be explained or comprehended;" his suppressed major premiss may be refuted by the argument, that "the connexion of the body and soul cannot be explained or comprehended, &c. A great part of the reasoning of Butler's Analogy may be exhibited in this form."

Unless we understand the precise meaning of Aristotle's general law, viz. "whatever is predicated of a whole class, may be predicated of any thing contained in that class," we may, on inspecting some of the following moods and figures, suppose them to be violations of this principle. But we have to recollect that by the whole class, the middle term is to be understood. The rule expressed with greater precision is, "*Whatever may be predicated of a distributed middle, may be predicated of any thing contained in it;*" which of course implies, *whatever is denied of a distributed middle excludes from it all particulars in the whole class denied.* But we are not at liberty to *affirm* any thing of a particular not contained in a middle term, whether that be affirmed of that middle or not; except to affirm that the par-

* See Art. 18, note 1.

ticular is no part of the middle when the minor term excludes itself. To determine these points, the middle term must always be known. (See page 35 and seq.) The three cases to which we allude may be thus illustrated.

No part of an eagle is iron.

All half eagles are parts of an eagle; therefore
No half eagle is iron.

No money is iron.

These tokens are iron; therefore
Not one of these tokens is money.

Here it is not tokens that are thrown out of the class "iron," but money; there is then excluded from the class iron, all particulars of the whole class (money) so excluded, whether eagles, dollars, cents, sovereigns, &c.

Whoever has read Persius in Latin, and Homer in Greek, is a classic.

Sancho read (not Persius in Latin, nor Homer in Greek;) therefore
Sancho was not a classic.

Very true; but we cannot prove it from a class to which poor Sancho never belonged. Bring Sancho then to his proper class, and we shall have a proof; viz.

Whoever has not read Persius in Latin, nor Homer ~~in Greek~~, is not a classic.

Sancho read not Persius in Latin, nor Homer in Greek; therefore
Sancho was not a classic.

The First Figure.

bAr. Every flower is deciduous.

bA. Every tulip is a flower; therefore
rA. Every tulip is deciduous.

cE. No flower is an evergreen.

lA. Every tulip is a flower; therefore
rEnt. No tulip is an evergreen.

dA. All flowers are beautiful.

rI. Some deciduous plants are flowers; therefore
I. Some deciduous plants are beautiful.

fE. No falling body is a star.

rI. Some luminous bodies are falling bodies; therefore
O. Some luminous bodies are not stars.

The Second Figure.

cEs. No planet is fixed.

A. Every star is fixed; therefore
rE. No star is a planet.

cAm. Every star is fixed.*

Es. No planet is fixed; therefore
trEs. No planet is a star.

fEs. No planet is a sun.

tI. Some luminous bodies are suns; therefore
nO. Some luminous bodies are not planets.

bAr. Every star is fixed.

Ok. Some luminous bodies are not fixed; therefore
O. Some luminous bodies are not stars.

The Third Figure.

dAr. All flowers are beautiful.

Ap. All flowers are deciduous; therefore
tI. Some deciduous are beautiful.

dIs. Some flowers are deciduous,

Am. All flowers are beautiful; therefore
Is. Some beautiful are deciduous.

dAt. All flowers are beautiful.

Is. Some flowers are decidous; therefore
I Some deciduous are beautiful.

fEl. No star is dark.

Ap. All stars are distant bodies;
tOn. Some distant bodies are not dark.

* Comparatively, not absolutely so.

bOk. Some called Christians are not true believers;

Ar. All called Christians profess faith; therefore

dO. Some who profess faith are not true believers.

fEr. No star is dark;

Is. Some stars are unseen; therefore

On. Some unseen are not dark.

The Fourth Figure.

brAm. Every precious stone is a gem;

An. Every gem is brilliant; therefore

tIp. Some things brilliant are precious stones.

cAm. Every star is a fixed body;

En. No fixed body is a planet; therefore

Es. No planet is a star.

dIm. Some luminous bodies are comets.

Ar. All comets are wandering planets; therefore

Is. Some wandering planets are luminous bodies.

fEs. No falling body is a star.

Ap. All stars are luminous; therefore

O. Some luminous bodies are not falling bodies.

frEs. No fixed body is a comet.

Is. Some comets are luminous; therefore

On. Some luminous bodies are not fixed bodies.

INTERROGATORY EXAMINATION

ON

CHAP. II.

Q. 1. What do you understand by the mood of a syllogism? Art. 145.

Q. 2. What is the figure of a syllogism? 146.

Q. 3. When the middle term is the subject of the major and predicate the minor premiss, what is the figure? 147.

Q. 4. When the middle term is the predicate of both premises, what is the figure? 141.

Q. 5. When the middle term is the subject of both premises, what is the figure? 148.

Q. 6. When the middle term is the predicate of the major and subject of the minor premiss, what is the figure? 149.

Q. 7. Can you express all this by one mnemonic line? 150.

Q. 8. How many moods do the four figures contain? 151.

Q. 9. Can you repeat the mnemonic lines relative to these moods? 152.

Q. 10. What do the initial consonants of these mnemonic words signify? 152, note.

Q. 11. What do the vowels denote? 152, note.

CHAP. III.

On the Reduction of Syllogisms.

(Art. 153.) The REDUCTION OF A SYLLOGISM is that process by which an imperfect mood is changed into a perfect one of the first figure.

1. We are not to understand by the reduction of a syllogism, that we are at liberty to introduce any new term or proposition. But syllogisms may at all times be reduced from the second, third or fourth figures to the first, declaring from the same premises the same conclusion, by inferential conversion (Art. 100 and 101) whether simple (Art. 102) or particular conversion (Art. 103,) and by the transposition of their premises as occasion requires, as taught by the mnemonic lines, (Art. 152.)

(Art. 154.) Reduction is either OSTENSIVE, which shows that the conclusion is as it affirms; or AD IMPOSSIBLE, that it cannot be otherwise; or if false, the reverse.

1. The method of reduction is taught by the mnemonic symbols (art. 152.)

First. The initial consonants B C D F, (no others are employed,) show to what mood (*Barbara, Celarent, Darii,* or *Ferio*) of the FIRST FIGURE, the reduction is to be made.

Secondly. The vowels A E I O (no others being used) indicate the character of the propositions, according to the well known signification of these symbols.

Thirdly. M signifies that the premises are to be transposed. S. P. denote that the proposition which the preceding vowel stands for, is to be converted, either S *simply* (art. 102) or P *particularly* (art. 103) and P in the mood Bramantip, intimates that the premises warrant a universal conclusion instead of a particular.

Lastly. K is the mark of reduction ad impossible; i. e. the proposition denoted by the vowel immediately before it must be left out, and the contradictory of the conclusion substituted; which being done, we shall have in the first figure, a conclusion, either the same with that premiss, one convertible into it, or its contradictory, other letters are not used.

2. It will be proper here to remember according to art. 95, and art. 104; that

A and O or E and I are contradictories; and

By *simple conversion* E is converted into E, and I into I; by *particular conversion* A into I; and E into O.

(Art. 155.) For S P convert the proposition, either *s simply*, or *p*, particularly; for M transpose the premises; and for K reduce ad impossible, by substituting instead of the premiss the contradictory of the conclusion, as A for O, and E for I, and vice versa.

EXAMPLES OF OSTENSIVE REDUCTION.

The reduction to the first figure of each of the following examples, will be found opposite to itself on the next page.

The Second Figure.

			Convert the whole to the mood.
cEs	No planet is fixed—	*convert simply*	Celarent.
A	Every star is fixed—	*as it is*	
rE	No star is a planet—	*as it is*	
cAm	Every star is fixed:	*transpose the premises,* †	Celarent.
Es	No planet is fixed:	*and simply convert E,*	
trEs	No planet is a star:	*convert simply,*	
f Es	No planet is a sun:	*convert simply*	Ferio.
tI	Some luminous bodies are suns:	*as it is*	
nO	Some luminous bodies are not planets:	*as it is*	

The Third Figure.

dAr	All flowers are beautiful:	*as it is*	Darii.
Ap	All flowers are deciduous:	*convert particularly*	
tI	Some deciduous are beautiful:	*as it is*	
dIs	Some flowers are deciduous:	*transpose and*	Darii.
Am	All flowers are beautiful: *	*simply convert I,*	
Is	Some beautiful are deciduous:	*convert simply*	
dAt	All flowers are beautiful:	*as it is*	Darii.
Is	Some flowers are plants:	*convert simply*	
I	Some plants are beautiful:	*as it is*	
f El	No star is dark:	*as it is*	Ferio.
Ap	All stars are distant:	*convert particularly*	
tOn	Some distant bodies are not dark:	*as it is*	
f Er	No star is dark:	*as it is*	Ferio.
Is	Some stars are unseen:	*convert simply*	
On	Some unseen are not dark:	*as it is*	

* Plants omitted for the sake of shortness; easily understood.

† By transposing the premises, understand, placing the minor premises instead of the major, and the major instead of the minor.

The examples opposite on the preceding page, reduced to

The First Figure.

cE No fixed body is a planet.
lA Every star is fixed; therefore
rEnt No star is a planet.

cE No fixed body is a planet.
lA Every star is fixed; therefore
rEnt No star is a planet.

fE No sun is a planet.
rI Some luminous bodies are suns; therefore
O Some luminous bodies are not planets.

dA All flowers are beautiful.
rI Some deciduous plants are flowers; therefore
I Some deciduous plants are beautiful.

dA All flowers are beautiful.
rI Some plants are flowers; therefore
I Some plants are beautiful.

fE No star is dark.
rI Some distant bodies are stars; therefore
O Some distant bodies are not dark.

fE No star is dark.
rI Some unseen are stars; therefore
O Some unseen are not dark.

The fourth figure.

brAm Every precious stone is a gem: } *transpose the premises.*
An Every gem is brilliant:
tIp Some brilliant stones are precious. *change to universal.* } Barbara.

c Am Every star is a fixed body: } *transpose the premises.*
En No fixed body is a planet.
Es No planet is a star. *convert simply* } Celarent.

dIm Some luminous bodies are comets: } *transpose.*
Ar All comets are irregular planets:
Is Some irregular planets are luminous bodies. *con. simply.* } Darii.

fEs No falling body is a star: *convert simply.*
Ap All stars are luminous: *convert particularly.*
O Some luminous bodies are not falling bodies. *as it is.* } Ferio.

frEs No fixed body is a comet: *convert simply.*
Is Some comets are luminous: *convert simply.*
O Some lunimous bodies are not fixed. *as it is.* } Ferio.

bAr Every gem is brilliant.

bA Every precious stone is a gem,
rA All precious stones are brilliant.

cE No fixed body is a planet.

lA Every star is a fixed body.
rEnt No star is a planet.

dA All comets are irregular planets.

r I. Some luminous bodies are comets.
I. Some luminous bodies are irregular planets.

fE No star is a falling body.

rI Some luminous bodies are stars.
O Some luminous bodies are not falling bodies.

fE No comet is a fixed body.

rI Some luminous bodies are comets.
O Some luminous bodies are not fixed bodies.

REDUCTION AD IMPOSSIBLE.

(Art. 157.) "Reduction ad impossible proves, in the first figure, not directly that the original conclusion is true, but that it cannot be false, or that an absurdity would follow from the supposition of its being false."

1. This kind of reduction is chiefly employed for Baroko and Bokardo; for example

bAr. Every star is fixed.

Ok. Some luminous bodies are not fixed.

O. Some luminous bodies are not stars.

If this conclusion be not true, its contradictory must be true: let this then be tried, by substituting as K implies (Art. 154, n. 1) instead of the "proposition denoted by the vowel immediately before K, the contradictory of the conclusion." If this lead to a true consequence, the above conclusion is false, otherwise true; as

bAr. Every star is fixed.

bA. All luminous bodies are stars.

rA. The false consequence to which this would lead, viz. all luminous bodies are fixed, proves that the original is true.

bAr. All true patriots are friends to religion.

Ok. Some great statesmen are not friends to religion.

O. Some great statesmen are not true patriots.

The minor of this syllogism is false, and therefore leads to a false conclusion. But how is this to be proved? It may be proved by the substitution of the contradictory of the conclusion, viz. "all great statesmen are true patriots," instead of the proposition of K: we shall then have both premises universal, in the mood Barbara, and shall be warranted in drawing a universal conclusion; as,

All true patriots are friends to religion.

All great statesmen are true patriots.

All great statesmen are friends to religion.

This true conclusion proves the original one false from a false minor. Be this then the character of a great statesman, for such and such only are great.

INTERROGATORY EXAMINATION

ON

CHAP. III.

Q. 1. Explain what is meant by the reduction of a syllogism. Art. 153.

Q. 2. Into what figure is all reduction effected? 154.

Q. 3. What is ostensive reduction? 154.

Q. 4. What is reduction ad impossible? 154.

Q. 5. What do the initial consonants of the mnemonic lines, beginning with "Barbara, Celarent, Darii, Ferio," signify? 154, notes.

Q. 6. What do the vowels of those words denote? 154, notes.

Q. 7. When a mnemonic word begins with B, as Bramantip, into what mood of the first figure would you reduce? 154, notes.

Q. 8. When a mnemonic word begins with C, as Cesare, Camestres or Camenes, into what mood of the first figure would you reduce? 154, notes.

Q. 9. When a mnemonic word begins with D, as Darapti, Disamis, Datisi, Dimaris, into what mood of the first figure would you reduce? 154, notes.

Q. 10. When a mnemonic word begins with F, as Festino, Felapton, Fresison, into what mood of the first figure would you reduce? 154, notes.

Q. 11. What do the other consonants of these words, or consonants not initial, indicate? 154, notes.

Q. 12. Repeat the mnemonical lines, showing the meaning of these consonants. 155.

Q. 13. What does S signify? 155.

Q. 14. What does P signify? 155.

Q. 15. What does M signify? 155.

Q. 16. What does K signify? 155.

Q. 17. How would you reduce the mood Cesare?

Q. 18. How would you reduce the mood Festino?

Q. 19. How would you reduce the mood Darapti?

Here further examples for exercise may be taken from the Appendix.

CHAP. IV.

On Hypothetical Syllogisms.

(Art. 157.) A hypothetical syllogism is that in which one or more of its propositions are conditional or disjunctive.

1. Example;

If there is a God, the world is governed by providence.
But there is a God; therefore
The world is governed by providence.

2. For the definition of a conditional proposition see Art. 81; of a disjunctive, Art. 80.

3. These syllogisms admit of two sorts of true argumentation, whether the major is conditional or not.

First, when the antecedent is asserted in the minor, that the consequent may be asserted in the conclusion; as in the preceding example. This is called *arguing from the position of the antecedent to the position of the consequent.*

Secondly, when the consequent is contradicted in the minor proposition, that the antecedent may be contradicted in the conclusion; as,

If Atheists are in the right, then the world exists without a cause.
But the world does not exist without a cause; therefore
Atheists are not in the right.

This is called *arguing from removing of the consequent to the removing of the antecedent.*

4. "When a hypothetical conclusion is inferred from a hypothetical premiss, so that the force of the reasoning does not turn on the hypothesis, then the hypothesis must be considered as part of one of the terms, so that the reasoning will be in effect absolute; as

Predicate.

Every conqueror is either a hero or a villain.
Cæsar was a conqueror; therefore
Cæsar was either a hero or a villain.

5. "But when the reasoning itself rests on a hypothesis, in which an absolute conclusion may be drawn from a hypothetical premiss, this is what properly is called a hypothetical syl-

logism, and rules have been devised for ascertaining the validity of such arguments at once without bringing them into the form of simple syllogisms. In these syllogisms the hypothetical premiss is the major, and the absolute one the minor." For the general construction of a hypothetical syllogism is, that the first proposition is hypothetical, and the minor and conclusion absolute.

(Art. 158.) A hypothetical proposition is either CONDITIONAL; as, if he is wise, he is happy; or DISJUNCTIVE; as, either it is true or it is false.

(Art. 159.) A conditional syllogism is that whose major premiss is conditional.*

(Art. 160.) In a conditional proposition, the clause containing the *condition*, is called the ANTECEDENT; that containing the *assertion*, the CONSEQUENT; the connexion between them, the CONSEQUENCE.

1. The natural order is that the antecedent precede the consequent; though this is frequently reversed; as "The husbandman is well off, if he know his own advantages."—Virg.

(Art. 161.) The rules of conditional propositions are three.

Rule I. If the antecedent be granted, so is the consequent.

Rule II. If the consequent be taken away, so is the antecedent.

Rule III. Nothing can be inferred either from taking away the antecedent, or granting the consequent.

1. The truth or falsity of a conditional proposition depends entirely on the consequence; as, if mineralogy be useless, it deserves to be neglected; here both the antecedent and consequent are false; yet the whole proposition is true; i. e. it is true that the consequent follows from the antecedent.

If men be fallible free agents, they need the restraints of governm ent.
But men are fallible free agents; therefore
Men need the restraints of government.

2. It is evident on the inspection of this example, 1st, that

* Syllogisms are sometimes divided into 1st. Absolute, i. e. consisting of propositions which absolutely affirm or deny; and 2dly. Hypothetical, or those which contain at least one proposition of a conditional character.

the major proposition is conditional, and the minor and conclusion absolute. This then constitutes a hypothetical syllogism. 2. That the same major consists of two entire propositions, which together make an enthymeme; which enthymeme, if absolutely expressed, would be, *men are fallible free agents, therefore they need the restraints of government.* But before we can make it absolute, the conditionality of the major premiss, expressed by "if," must be destroyed. The minor premiss effects this, and by affirming absolutely, "men are fallible free agents," destroys if, and we have our enthymeme extricated from its difficulty, speaking unconditional language, "men ARE fallible free agents, therefore they need the restraints of government:" it is now, therefore, reducible to the syllogistic form, viz:

All fallible free agents need the restraints of government.

Men are fallible free agents; therefore
Men need the restraints of government.

3. Every conditional syllogism is either equivalent to an absolute syllogism, or wholly to be rejected. For in every conclusive conditional there is an absolute implied, in which the same argument would prove the same conclusion.

4. For in all hypothetical syllogisms the major proposition, consisting of two absolute propositions, (i. e. on the removal of the connective if) the minor is either one of these, or the contradictory to it, in order to infer, either the other, or its contradictory. In either case an enthymeme will be proposed, whose force lies in the conditional proposition, and which is not conclusive unless from that proposition there can be drawn a *completory*, that is, the premiss which is wanting in an enthymeme to complete the syllogism.

5. Now as an enthymeme is only one premiss with the conclusion of a syllogism, it has three, and only three terms. Suppose two of them are D and Δ, and C the third term. The other premiss, whose terms are D, and Δ is wanting; hence it follows, that according to the various dispositions of the terms, there are four forms of enthymeme, each of which will admit of a twofold completory; as in the following scheme.

The Enthymeme.		The Completory DΔ		ΔD
CD.	therefore CΔ.	The Major.	in Fig. I.	in Fig. II.
DC.			in Fig. III.	in Fig. IV.
CD.	therefore ΔC.	The Minor.	in Fig. IV.	in Fig. II.
DC.			in Fig. III.	in Fig. I.

6. Wherefore, as there are nineteen moods of absolute syllogism, and as each figure may be applied twice, to complete

an enthymeme, there will be thirty-eight ways, in which a man may argue with a syllogism, whose major is conditional.

(Art. 162.) There are two kinds of conditional syllogism, the constructive, answering to direct reasoning, and the destructive, answering to indirect reasoning.

1. The destructive "is in fact a mode of throwing the indirect form of reasoning into the direct"; as, "if C be not the centre of the circle, some other point must be; which is impossible: therefore, C is the centre." Euclid, B. III. Pr. 1.

(Art. 163.) The constructive is when, by granting the antecedent, you admit the consequent; 1, as,

Major prop. If this man has a fever, he is sick.
Minor prop. This man has a fever; therefore
Conclusion. This man is sick.

—

Major prop. If the crops are not bad, corn must be cheap.
Minor prop. But the crops are not bad; therefore
Conclusion. Corn must be cheap.

(Art. 163.) The destructive is when, by denying the consequent, you infer the contradictory of the antecedent.

Major prop. If this man has a fever, he is sick.
Minor prop. This man is not sick; therefore
Conclusion. This man has not a fever.

—

Major prop. If the crops are not bad, corn must be cheap.
Minor prop. Corn is not cheap; therefore
Conclusion. The crops are bad.

2. But if you affirm the *consequent*, or *deny* the *antecedent*, you can infer nothing, (126) for the same consequence may *follow from other* antecedents; as, in the case above, a man may be sick from other disorders besides a fever; therefore it does not follow from his being sick that he has a fever; or, for the same reason, from his *not* having a fever, that he is not sick. It is evident, therefore, that there can only be two kinds of conditional syllogism; viz. 1, the *constructive;* as if CD, then KΔ; but CD, therefore KΔ; and the *destructive;* as if CD, then KΔ; but not KΔ, therefore not CD.

(Art 165.) A disjunctive syllogism is that whose major premiss is disjunctive.

The earth moves in a circle or an ellipse; but
The earth does not move in a circle; therefore
The earth moves in an ellipse.

1. For the definition of a disjunctive proposition, see Art. 80.

2. A disjunctive syllogism may, as the propositions of which it is composed, have many parts, i. e. subjects or predicates; as

It is either spring, summer, autumn or winter; but
It is not summer, autumn or winter; therefore
It is spring.

(Art. 166.) Since any disjunctive is easily turned into a conditional, the directions given for the one serve equally for the other.

1. For example;

It is either true or false.
But it is true; therefore it is not false.
But it is false; therefore it is not true.
It is not true; therefore it is not false.
It is not false; therefore it is not true.

Instead of this, it is easy to say,

If it is true, then it is not false.
If it is false, then it is not true.
If it is not true, then it is false.
It is not false, then it is true.

2. "A Disjunctive may consist of any number of absolute propositions; and of these, some one at least must be true, or the whole proposition will be false: if, therefore, one or more of these absolute propositions be denied, you may infer that the remaining one, or (if several) some one of the remaining ones is true; as, "either the earth is eternal, or the work of chance, or the work of an intelligent Being;" it is not eternal nor the work of chance; therefore it is the work of an intelligent Being.

3. In examples similar to these it is implied not only that one of the members must be true, but that only one can be true; so that in such cases, if one or more be affirmed, the rest may be denied. But this is by no means universally the case; as, virtue tends to procure us either the esteem of mankind or the favor of God; here both members are true, and consequently by affirming one we are not authorised to deny the other.

(Art. 167.) A dilemma is a conditional syllogism with two or more antecedents in the major, and a disjunctive minor.

Major. "If Æschines joined in the public rejoicings, he is inconsistent; if he did not he is unpatriotic.
Minor. But Æschines either joined or did not;
Conclus. Æschines is either inconsistent or unpatriotic."
[DEMOSTH. FOR THE CROWN.

3. This kind of reasoning, is very common with Euclid; when about to demonstrate the equality of two figures, he frequently assumes that if the one is not equal to the other, it is either greater or less: and having destroyed both these suppositions on which the assertion of their inequality can rest, he thence infers, by this indirect reasoning, the equality of the figures, and the absurdity of its contradiction.

3. The two conditionals that constitute the major premiss may sometimes be omitted in one proposition by means of the word, *whether;* as, "if the blest in heaven have no desires, they will be perfectly content; so they will be if their desires are fully gratified;" may be reduced to "whether the blest, &c. have no desires, or have them gratified they will be content."

4. If the several antecedents have each a different consequent, then the antecedents being disjunctively granted, you can only disjunctively infer the consequent as in the first example. This case is that of the constructive dilemma.

5. "In the destructive form if you deny the whole of the consequent or consequents, you may deny the whole of the antecedents; as "if the world were eternal, the most useful arts, (such as printing, &c.) would be of unknown antiquity:" and on the same supposition there would be records long prior to the Mosaic; and likewise the sea and land, in all parts of the globe might be expected to maintain the same relative situations now as formerly; but none of these is the fact, therefore the world is not eternal.

6. Or,

Major. If the world existed from eternity there would be records prior to the Mosaic: and if it were produced by chance it would not bear marks of design.

Minor. But there are no records prior to the Mosaic; and the world does bear marks of design; therefore

Conclus. The world neither existed from eternity, nor is it the work of chance.

7. "These, though commonly called dilemmas, hardly differ from conditional syllogisms, two or more being expressed together. Nor is the case different, if you have one antecedent with several consequents, which consequents you disjunctively deny; for that comes to the same thing as wholly denying them; since if they be not all true, the one antecedent must equally fall to the ground; and the syllogism will be equally simple.

8. That is more properly called a destructive dilemma which has a disjunctive minor premiss; i. e. when you have

several antecedents with each a different consequent; which consequents, instead of wholly denying them, you disjunctively deny; and thence, in the conclusion, deny disjunctively the antecedents; as,

Major. If this man were wise, he would not speak irreverently of Scripture in jest; and if he were good, he would not do so in earnest;
Minor. But he does it either in jest or in earnest; therefore
Conclus. This man is either not wise, or he is not good.

9. "Every dilemma may be reduced into two or more simple, absolute syllogisms: as, the first example, 'If Æschines joined, &c. he is inconsistent; he did join, &c. therefore he is inconsistent;' and again, 'If Æschines did not join, &c. he is unpatriotic; he did not, &c. therefore he is unpatriotic.' Now an opponent has his choice to deny either, of the minor premises, but he cannot deny both, and therefore he must admit one or other of the conclusions: for when a dilemma is employed, it is supposed that some one of the antecedents is true; or, in the destructive kind, some one of the consequents false, but that we cannot tell which of them is so, and this is the reason why the argument is stated in the form of a dilemma."—*Dr. Whately.*

10. A dilemma is of no force, unless, 1. One or the other part must be accepted. 2. Either one or the other prove the point. And 3. It cannot be retorted. For example *Bias* tells you, "If you marry a beautiful woman, she will be vain; if an ugly one, despised; therefore marry none." Now had Bias observed the three conditions specified he would have perceived that his argument fails in every particular; for, 1. A wife may neither be beautiful nor ugly; therefore neither part of the dilemma need be accepted. 2. Neither is every beautiful woman vain, nor every ugly one despised. Therefore neither part of it proves the point. 3. It may be retorted thus, If I marry the one at least she will not be vain; if the other, she will not be despised.

11. To exemplify the dilemma further, and the mode of retorting it, the following case is quoted. Euathlus promised Protagoras a reward when he had taught him the art of pleading and it was to be paid on the first day that he gained any cause in the court. After some time Protagoras goes to law with Euathlus for the reward, and uses this dilemma.

Either the cause will go on my side, or on yours;
If the cause go on my side, you must pay me according to the sentence of the judge.
If the cause go on your side, you must pay me according to your bargain; therefore
Whether the cause go for me or against me, you must pay me the reward.

But Euathlus retorted this dilemma thus;

Either I shall gain the cause or lose it;
If I gain the cause then nothing will be due to you, according to the sentence of the judge;
But if I lose the cause nothing will be due to you, according to my bargain; therefore
Whether I lose or gain the cause, nothing will be due to you.

(Art. 168.) Hypothetical syllogisms may be reduced to the absolute form by considering every conditional proposition a universal affirmative, of which the terms are entire propositions, viz: the antecedent the subject, and the consequent the predicate; as,

If the stoics are right, then pain is no evil;
But pain is an evil; therefore
The stoics are not right.

Reduced thus:

The case of the stoics being right, is the case of pain being no evil;
The present case is not the case of pain being no evil; therefore
The present case is not the case of the stoics being right.

This is Camestres, which is easily reduced to Celarent; or all conditional syllogisms may be reduced to Barbara, by considering them as constructive.

2. The reduction of Hypotheticals may be always effected either in the manner stated, or by unfolding the argument into two syllogisms; or we may, when requisite, subject any argument to the test of Aristotle's dictum, in order to show that all reasoning turns upon one simple principle.

3. Certain writers on the subject of Logic have specified other kinds of what they conceive to be syllogism; some of which, however, are not even argument, but propositions, each expressing its own truth, placed the one after the other, in consecutive, or grammatical, but not in argumentative connection. These, whatever writers on Logic may do, Logic itself does not recognize, until they are reduced, as all, not excluding hypotheticals, may, to the *one only form* it proposes as a universal test, by which to try not one or fifty modes, but the whole of all argumentation, and of every thing having the least claim to that character; to which if any thing assuming the appearance of reasoning does not conform, nor bear the rigor of its examination, it certainly is to be rejected, as that which classes with fallacy and not with either truth or argument.

INTERROGATORY EXAMINATION

ON

CHAP. IV.

Q. 1. What is meant by a hypothetical syllogism? Art. 157.
Q. 2. How many kinds of hypothetical syllogisms do you enumerate? 158.
Q. 3. What are the parts of a conditional proposition? 160.
Q. 4. Repeat the rules of hypothetical syllogisms. 161.
Q. 5. If you grant the antecedent what is the result? 161.
Q. 6. If you deny the consequent what is the result? 161.
Q. 7. What is a disjunctive syllogism? 165.
Q. 8. What is a dilemma? 167.

CHAP. V.

On the Enthymeme, Sorites, Induction, &c.

There are certain other forms of argument, whose ordinary form, though not in regular syllogistic order, may be easily reduced to it, or to the test of the general law of reasoning. These either are syllogisms with a suppressed premiss, a series of abridged syllogisms, or one or more expanded; such as the enthymeme, the sorites, the epichirema, &c.

(Art. 169.) The enthymeme is a syllogism with one premiss suppressed.

1. As, "he is a good man; therefore, he is happy." Here the major premiss "all good men are happy," is suppressed. "Every man is mortal; therefore every king is mortal;" here the minor, "every king is a man," is the suppressed premiss.

2. Sometimes the whole argument is abridged into one sentence; as, "being mortal, do not bear immortal hatred;" but as all the terms will be found in the expressed premiss and conclusion, it will be easy to fill up the syllogism by supplying the premiss that is wanting.

3. This is the ordinary form of speaking or writing. It is evident that the enthymeme may be filled up hypothetically.

The premiss of an enthymeme is sometimes called the *antecedent*, the conclusion, the *inference*, and the suppressed premiss, the *completory*.

4. The moment an enthymeme is contested, it will be necessary to add the completory, and to prove the whole by the stricter rules that apply exclusively to the syllogistic form.

(Art. 170.) A sorites is a series of abridged syllogisms, so arranged that the conclusion *only* of each is made the premiss of the next; and the *predicate* of every preceding proposition is made the *subject* of the next, until the *predicate* of the *last* is predicated of the *subject* of the *first*.

1. As,

There can be no enjoyment of property without government.
No government without laws enforced.
No laws enforced without a magistrate.
No magistrate without obedience.
And no obedience where every one acts as he pleases; therefore
There can be no enjoyment of property, where every one acts as he pleases.

2. A sorites has as many middle terms as there are intermediate propositions between the first and the last; and consequently it may be drawn out into as many separate syllogisms. This kind of argument, therefore, as it serves to unite several syllogisms into one, must stand upon the same foundation with the syllogisms of which it consists; and is, indeed, properly speaking, no other than a compendious way of reasoning syllogistically, and can be tried only by the same test.

4. A series of hypothetical syllogisms, may, in a similar manner, be abridged into a sorites; as

If the Scriptures are the word of God, it is important that they should be well explained.
If it is important that they should be well explained, they deserve to be diligently studied.
If they deserve to be diligently studied, an order of men should be set aside for that purpose,
But the Scriptures are the word of God; therefore, an order of men should be set aside for that purpose.

(Art. 171.) The Epichirema is a syllogism in which the major and minor are proved before the conclusion; as,

Major. Parties that aim at universal supremacy are not eligible to the exercise of the legislative function.

Because all their legislative acts would be biassed by an aim incompatible with the general welfare, and with the established principles of a free state.

Minor. The party x—y aims at universal supremacy.

This is proved, 1st, by their principles written and declared in authentic and acknowledged documents. 2dly, By their acts approved or not censured by their polity. 3dly, By the injurious means adopted to disseminate or enforce those principles, and sanction those acts; therefore

Conclus. The party x—y is not eligible to the exercise of the legislative function.

Example 2d.

Major. A religion attested by miracles is from God.

Because an infinitely wise, benevolent Being, that ordains and preserves the laws of nature, would not allow them to be suspended or controlled, except for purposes congenial to his own nature, and promotive of his wise and benevolent designs.

Minor. The Christian Religion was attested by miracles.

This is attested 1st, By those who could have no worldly prospect in view consequent on such testimony, but, on the contrary, had to contemplate, as the inevitable consequence, every secular privation and affliction, and even loss of property and life, by all the cruelties that persecution and the opposers of Christianity could inflict.

2. By the testimony of the very enemies and opposers of Christianity themselves, as appears from the evidence of many profane writers; and "fas est doceri ab hoste."

3. By the benign and happy effects on the moralization and reform of mankind, consequent on an efficient embracing of that Christianity in all its consequences, which is attested by miracles.

Conclusion, therefore, The Christian Religion is from God.

3. The *epichirema* is simply *an expanded syllogism.* It may frequently be employed in writing, in orations, and in treatises. Each part of the argument involving a series of inferential and conclusive enthymemes or syllogisms, as distinct parts of the original premiss, though not formally expressed as such, comprises its own proof. Thus, the original major and minor premiss of the involving syllogism is distinctly proved, as the argumentative process moves to the conclusion.

4. We are not to infer from the terms usually employed to denote the different *subjects* or *objects* of reasoning, as, *a priori, a posteriori, a fortiori, direct* or *indirect demonstration, argumentum ad hominem, ad verecundiam, ad ignorantiam, ad populum,* or *ad judicium,* that these or any of them express any different *kind* of argument *as to form;* they merely differ according to the nature of the middle term selected, or the object in view, and are either enthematic or reducible, in common with every process of reasoning, to the general form, in which alone they may be subject to the tests peculiar to the syllogism.

5. REASONING A PRIORI, is that which infers an effect from its necessary cause, as when we prove that the sun will be eclipsed when the moon intervenes between us and him. REASONING A POSTERIORI, is that which infers the cause from its effect, as when we infer that the earth is spherical, from its shadow on the moon, or the possibility of its being *circum*-navigated. REASONING A FORTIORI,* consists in deducing a proposition as true, from a less to a more obvious proposition, involved by the same principle. Thus, if the felon, who robs on the highway, deserves the punishment of death, this retribution is due to the stronger case, to the wretch guilty of parricide.

6. REASONING IS DIRECT, when the proofs are so selected as to show immediately the agreement or disagreement between the subject and predicate of the conclusion. It is INDIRECT, when the predicate of the conclusion admits an alternative, the one the contradictory of the other, so that, if one is true, the other must be false or absurd, and there is no medium but to accept of this absurdity, or to admit the only conclusion that can, in such case, be true. Thus Euclid proves by an indirect course, that "if two circles touch each other internally, they cannot have the same centre." He first supposes the contrary to be true, namely, that the two circles have the same centre, and no third supposition can be made, for they must either both have the same centre or not. He then demonstrates the impossibility of the case assumed, and then infers the truth of the proposition which he first asserted. Thus it is proved that the moon is either opaque or transparent; as, it is not transparent, because, if it were, it would transmit the rays of the sun through it when it comes between the sun and the earth, and no eclipse of the sun could happen

*A fortiori can only mean, *from* a stronger case, to one less so, but in the sense in which it is commonly interpreted, it should be ad fortiorem, to a stronger, &c.

from the intervention of it between the sun and the earth. But this conclusion is contrary to truth, for such eclipses do happen. The alternative, therefore, that the moon is a transparent body must be false, and consequently the original predicate must be true, viz. that the moon is an opaque body. The refutation of the alternative is always pursued till it terminate in some contradiction or absurdity, and on this account, indirect reasoning is generally termed "*reductio ad absurdum.*"

7. ARGUMENTUM AD HOMINEM, literally an argument, not to *a* man, but to THE man, that particular character with whom you are engaged; or even though a singular itself, in the plural sense, to THE men, according to the peculiarity of their principles, opinions or prejudices. It is frequently employed for a good purpose, and occasionally, for such sometimes is either the narrow-mindedness or obstinacy of men, necessarily so. "It is in this way that our Lord, frequently silenced the cavils of the Jews; as, in the vindication of healing on the sabbath, which is paralleled" by their own allowed practice of drawing out a beast on that day, that had fallen into the pit; a practice which evinced their own general principle to be, that to do good on the Sabbath was lawful, in their case, to a beast, and therefore, much more in the nobler act to a man. This kind of reasoning, in such cases as this, applicable to a good purpose, nevertheless, in common with all other good or useful things, is capable of being abused by its application to a bad one. It is however, as well as all reasoning, reducible to the syllogistic form, in which, itself, its premises, and their connection, may be subjected to the same test, as well as any other mode of reasoning.

8. ARGUMENTUM AD VERECUNDIAM is that which derives its middle term or premises, however expressed or put together, from the sentiments, or opinions of some wise, great or good men, whose authority we reverence, and scarcely can presume to oppose; i. e. an address to our modesty.

9. ARGUMENTUM AD IGNORANTIAM, improperly termed argument, bears on the very face of it *intended deception*, a fallacy practised on the ignorant, a device, alas! too common, and wickedly employed by the *children of him* who is the *father of lies*, for the interest of *self, pocket* or *party*. ARGUMENTUM AD POPULUM, or *argument addressed to the people*, or to the *passions* of human nature, as well as ARGUMENTUM AD CAPTANDUM, *argument to catch*, are the two big guns of the demagogue, which he employs instead of either ARGUMEN-

TUM AD REM, argument to the point, or ARGUMENTUM AD JUDICIUM argument to the understanding or judgment, or to the cool and deliberate considerations of men, who without his political fanaticism would be calm, and adopt measures more conducive to the public welfare than the inflammatory combustibles to which he invites their torch.

INTERROGATORY EXAMINATION

ON

CHAP. V.

Q. 1. What kind of argument is an enthymeme? Art. 169.
Q. 2. Give an example of an enthymeme. 169.
Q. 3. What kind of an argument is the sorites? 170.
Q. 4. Can you give an example of the sorites? 170.
Q. 5. What is an epichirema? 171.

CHAP. VI.

General Remarks on Arguments, &c.

1. The several kinds of argument enumerated in the preceding chapter, especially the common enthymeme, are so many distinct modes of *modern* as well as of *ancient* reasoning; and they are all, *whenever necessary*, reducible to one form. *Induction* and analogy are syllogistic; an *enthymeme* is a part of a syllogism, and with its completory constitutes a whole one. A *sorites* is a series of the parts of several syllogisms, the completories being implied, and necessary if contested. *The epichirema* is an expanded syllogism, or a syllogism involving the parts or the whole of many others. *Mathematical demonstration* itself implies one or more syllogisms. All the rest are parts, or syllogisms out of order; in which state they may frequently, and that reasonably, be satisfactory to some or to many, as they stand, and may be

explained to more, but can be *demonstrated* to none, except by the one, the only known law, (i. e. the *genus* whatever *species* may be adopted) of demonstrative argumentation, which alone has strict rules, such that if truth be only in the premises, those rules are sufficient, when the whole of what is to be argued is in the syllogistic order, to demonstrate in a moment whether the conclusion be true or false.

2. That is, we can say, the moment any thing having, by right or sufferance, the name of argument, is thrown into the syllogistic form, and the several rules made to bear upon it in that form, whether it is true or false *as an argument*. If we are not aware of the truth of the premises, that is another thing. Logic does not pretend to prove the truth of all propositions, any more than it pretends to prove who lives in the moon; or any more than Euclid ever pretended to prove the properties of squares, circles and triangles, until he had previously established, by antecedent data, such propositions as were necessary to constitute the premises of the argument with which he was engaged. We, to demonstrate that "this is," or "it is not," must do likewise. If we have not premises, neither axioms, nor truth acknowledged or proved by antecedent demonstration, we must obtain such, or one datum at least, undeniably involving our minor term, of which we may predicate the same major. Having this datum, the way is perfectly clear; that is, to predicate the major of the minor contained in a *distributed* middle of which the same major is predicated, provided that no term is distributed in the conclusion, which was not distributed in the premises, and that those premises are not *both* either particular or negative.

3. We have said "that the way is clear," and not only the way, but the result is often so clear, that when the premises, before at a distance, and the conclusion, are placed in juxtaposition, they express an *obvious* truth: and we say, the more obvious truth is the better. Yet for this very obviousness, this clearness, syllogism has been censured by those who scarcely understood the nature of their own remarks. This bottle, containing the medicine you are going to take, has corrosive sublimate held in solution, so disguised that you know nothing about it. Fortunately, you take it to the chemist, who analyzes it, precipitates the sublimate, reduces it to its usual form, and shows it to you; and you exclaim, "O, this is corrosive sublimate, this is poison, of course, *every one knows that.*" True; but did you know it in the bottle? Do you thank the chemist for the service he has rendered you?

4. Here is a book of two hundred pages; its principal parts are only three terms, but so put together, or the mode of connection so artfully concealed, that it is highly calculated to deceive. Here the poison is held in solution, and that so colored by plausibility and eloquence that it imposes on a multitude, and disseminates its pestilence through a nation. You have read it; it has disturbed your mind; but you cannot say why or wherefore. You hand it to the analyst; he finds the three terms, places them together in juxta-position, exposes the fallacy, and exhibits the poison; and you exclaim, "this is too plain, every one knows this." Be on your guard; you are mistaking the point; you knew it not when in the bottle or the book; you have thrown away both the bottle and the book, but you have neither thanked the chemist nor the syllogism. If it is plain, so much the better. Men love, when in a diluted state, even the works of the devil; but if they could bring his pretty face to the looking glass, they would love neither him nor his works any longer. Plainness, obviousness is the very thing at which we aim; and the nearer to this daylight all conclusions can be brought, so much the better. *The syllogism does this, or nothing does.*

5. "No," say you, "mathematical demonstration does this." Another "ignoratio elenchi," mistake of the question, since all mathematical reasoning is syllogistic, conducted on syllogistic principles, and reducible to that form. Mathematical reasoning throughout is deducing some particular from a universal, some consequent from an antecedent involving it, something unknown from something known, something unmeasured from a known measure that measures it. If syllogistic principles did not exist, neither could mathematical reasoning; therefore we repeat again, that syllogism alone does this, *is itself all reasoning*, and we challenge the world, including great names, to show a better way, not only one more direct to the point, more general in its application, but also one in which fallacy is more immediately detected.

6. "But," say you, "are we not allowed to reason, except we use your syllogism? Must we lay aside our ratiocinative faculties on the dusty shelf, till we throw every thing into mood and figure?" Truly, if you think so, we pity you, for your fancy has conjured up, not one, but many ghosts, which lie, thick as bees, concealed under every illative particle, such as *for, because, therefore, wherefore,* &c. and now your ratiocinative powers are fairly matched against a host! Mercury complained to his mamma, one morning, that he had

more business to do than any body else in heaven; Hercules made the same complaint as to his concerns on earth; but now you have more to do than either.

7. No man demands a demonstration of an axiom, of a self-evident truth, an object of intuitive evidence, nor of you, nor of another, on every occasion, when either of you introduce a clause, by an illative, an inferential particle, since he perceives its truth, is convinced of it, as well as you, and demands a reason no otherwise expressed than as you have done; that is sufficient to convince him. Nor even of a deductive truth, if it be acknowledged, even should you say, *these two vertical or opposite angles are equal,* BECAUSE *the straight lines enclosing them cut one another.* You have not demonstrated this. Your inference, (introduced by the illative, *because,*) you knew, and he knew, was just, and that, in such case, is sufficient. But what if he should demand a proof; what are you to do? Then you will want Euclid, and if you have Euclid, you have syllogism, for he that has the *species,* must know something of the properties of the *genus.*

8. Should I say, "the act Y is illegal," I pronounce only *one proposition,* expressing one act of judgment, without assigning any reason on which that judgment is founded. If you demand that reason, I may reply, "the act Y is illegal, *because* all acts prohibited by government are illegal;" and now that which was at first only *one proposition* becomes the common enthymeme. I employ this enthymeme, because *I am aware* that Y is one of the acts prohibited by government, therefore the word *because,* and the clause it introduces, convey a sufficient reason to me, but not to you, who are not aware that Y is one of those acts. On your pressing me further on the subject, I discover that I had offered an argument sufficient for one man, but not for two, consequent on the different degree of previous information possessed by each of us; and therefore give you the only remaining enthymeme that the subject admits of, viz: "the act Y is illegal, *because* Y is an act prohibited by government;" and the two enthymemes stand thus:

The act Y is illegal, because all acts prohibited by government are illegal.

The act Y is illegal, because Y is an act prohibited by government.

Of the above enthymeme it is evident that the completory of the first is the minor, and of the second the major proposition of the complete syllogism: and that neither the first nor the second enthymeme is a complete argument. And for the

want of this completion, the first enthymeme, though sufficient for me, was not to you, not knowing that Y was one of the acts prohibited; and the second enthymeme does not affirm that acts prohibited by government are illegal. But the two are reducible to one complete argument, expressing both these, viz:

All acts prohibited by government are illegal.

The act Y is an act prohibited by government; therefore

The act Y is illegal.

9. Having now the complete argument before us, if you are my opponent, I see at once the precise limits in which you must meet me; and ask, do you intend to deny the minor? Then you must prove that Y is *not* an act prohibited by government. I appeal to the proper authorities; 1st, to the definition of Y, and that being found to correspond, I prove to you by the statutes, &c. that Y is an act expressly prohibited by government. If you cannot oppose me in the minor, you must in the major, in which case you will immediately differ from me in politics, and have the boldness to deny that "all acts prohibited by government are illegal."

10. If the "*onus probandi*," or task of proving, is then still to devolve on me, I must change the field of argument, and meet you on another, viz. *For all fallible free agents, that, without restraint, would exist merely to destroy themselves, and one anothers' property, the laws of government necessarily determine what is illegal; men are fallible free agents, that, without restraint, would exist merely to destroy themselves and one anothers' property; therefore, for men the laws of Government* NECESSARILY *determine what is illegal.* As no man of sense will deny either the minor or the major of this argument, and no man ever did but what was shunned by all rational society, and his sentiments recorded only in the annals of infamy, it is, therefore, supposed that the validity of what was first introduced by the inferential particle, *because*, is now granted, though it was not at first perceived. Thus syllogism or argument is only necessary when formal proof is required; on all ordinary occasions, the common enthymeme is accepted.

11. On the subject of argument, a very important question presents itself, viz: was it, or was it not, intended by the author of our existence, that we, as rational beings, should be capable of arriving at the whole of all truth that concerns us,

by intuitive evidence only, and consequently, without the necessity of argument? To this question, an answer is immediately afforded by the common experience of all men, to whom every day, month, and year, testify by renewed examples, the necessity not only of the reasoning faculty itself, but of its constant exercise. It may be infered, therefore, not only that we should have minds capable of perceiving, but capable of reasoning: and that very properly so. The mind is the noblest part of man, yet it can only grow and expand by exercise; which exercise is the reach after new truth; by which very act, and by that alone, can its capacity be enlarged to receive that truth. The acquisition of the one and the exercise of the other are collaterally inseparable; and if the one is omitted, the other is lost. It is by this, and this alone, that the vigor of its own powers is increased, in discriminating, in judging, in perceiving things that differ, in comparing one with the other, in deducing the nature of a particular from a general law, and ultimately in rejecting things indifferent and unprofitable, and choosing that which is serviceable and good. Again, the benefit is always greater, when the mind, by the exercise of its own powers, makes its own discoveries, secures its own acquisitions, can trace its own difficulties, and the several steps by which it was finally led to victory, a victory its own, and not that of another, than it would be, had it been possible that another, whilst it remained passive and not equally concerned, should communicate the same science or the same truth. The very difficulty you encountered on a road and overcame, is to you a good memorialist; with Archimedes you can exclaim εὕρηκα, εὕρηκα,* and with Cæsar, "veni, vidi, vici;"† but all this to you, this vivid perception, this lasting remembrance, this victory, yours not mine, would have been lost, had the difficulty been overcome for you by another.‡

12. Difficulties are absolutely to be reckoned amongst the number of our blessings. They are powerful preachers, and

* "I have found it! I have found it!"

† "I came, I saw, I conquered."

‡ "I met with one day," said a student at Oxford, "a mathematical difficulty. It cost me a fortnight's hard anxious study. At last I overcame it, and the effect it had on me was such, that I began skipping and jumping all over my room." Now had all this been demonstrated to Dr. C. as he sat quietly in his chair, the several difficulties would have been anticipated, one by one, without his perceiving them to be such, and his mind comparatively passive, exclaiming; "very true," "of course," "this is as might have been expected," and of course no victory at all. As it was, the enthusiasm of Archimedes was all his own.

often strike home, and awaken faculties otherwise dormant. If the attention is excited, and caused to drop concerns comparatively unimportant, that cannot edify, and to fix intently, and with solicitude, the mind's eye on what alone can enlarge and enlighten its field of view, from that moment, and not until then, that mind begins to grow. It does not, and cannot, were all truth or any part of valuable truth offered to it, when not in a state in which it is possible to receive it. But it grows and improves, because the mind by this act places itself in an attitude, in a state and condition of receiving; and in proportion as this act is continued, and to the greater energy with which it is exerted, that mind continues to enlarge, not only by its increased susceptibility of receiving, but also by the continued attainment of all that antecedent conviction, light and truth, which are the pre-requisites for every subsequent acquisition, and the whole the necessary consequence of that attention duly directed.

13. If the commander of a naval fleet could, on the day of battle, exclaim to his men, "This day England expects every man to do his duty," is it to be expected that the Giver of mind does not virtually say to all to whom he has given it, "This day, the day of your probation, He that gave you mind, expects that mind to do its duty." For if your mind does not do this for itself, no other either can, nor ever will do it for you, and the case is lost. And that duty is alone discharged in this exercise, in the diligent pursuit and acquisition of truth.

14. We have, in the second chapter of Proverbs, a beautiful picture of mind in the attitude of this exercise, this seeking and pursuit after truth, drawn with all the elegance and expressiveness of oriental metaphor, "My son, if thou wilt receive my words, and hide my commandments with thee, so that thou *incline thine ear* unto WISDOM, and *apply thine heart* to UNDERSTANDING; yea, if thou *cryest* after KNOWLEDGE, and *liftest up thy voice* for understanding; if thou *seekest her* as silver, and *searchest for* her *as for hid treasures*, then shalt thou understand the fear of the Lord, and find the KNOWLEDGE OF GOD. For the Lord giveth WISDOM; out of his mouth cometh KNOWLEDGE and UNDERSTANDING." Now we have only to conceive of ourselves in this very attitude, in this mental state and exercise, searching with all the solicitude and love of truth, here so happily described, after a treasure of infinite value, transcending in excellency all we had ever found before; and we have the idea at once. And the

only reason that either can now, or ever can be given, why there are so many men, so many minds that do not grow, are no nearer truth now than they were twenty or forty years ago, is, that this is not their state, nor the condition of their minds. Consequently, each one knows just about as much as his neighbor; it is opinion or conjecture all, without conviction or victory to any.

15. Pilate once said to Jesus Christ, "*what is truth?*" but he was not answered, and that for the wisest and best of reasons. He who could best answer, did not choose to answer, or to unveil at once the universe of truth to a mind then utterly incapable of receiving it, and not at all engaged in the act of pursuing it. How is it possible to communicate to a babe in intellect the knowledge of a mind that has acquired capacity by exercise? Truth itself can only be acquired by successive gradations. It is true that some men can receive more at once than another; and thus to Sir Isaac Newton it was not necessary to read Euclid in the common way. But this alters not the case; even Sir Isaac himself did not, could not, receive the whole at once; the mind even of a Newton stood in need of reasoning, of argumentation, and knew that every consequent truth was dependant on some antecedent one of previous acquisition; and had not even his mind been a mind of solicitude in action, in reasoning, in argumentation, Sir Isaac never would have been great. The general fact then remains; it is only by successive gradations, successive acquisitions and victories, each implying some antecedent one, some distinct mental act, exercise and reasoning, that we can receive truth: a glorious structure itself, but admitting of ascent by successive steps; but no man complains that he is not at the top of the staircase whilst he will not place his own foot on the first step.

16. Enough perhaps, has been said to intimate that it was intended that the constitution of our minds and moral existence should be such as to require these successive acts of reasoning or argumentation. If so, then are we beings *capable* of reasoning; and as "nature acts by uniform and consistent laws," and "truth," according to Bishop Horsley, "is single and indivisible, and the constitution of all minds, as to every thing general and essential, the same, there must exist *some general law*, not many, *of reasoning*." Variations may and do exist, as to different subjects, but all these are distinctions as to application, or modifications according to special occasion, not affecting a general principle in itself uniform and unique. If

truth, then, is single and indivisible, and the source of that truth the same, though every where diffused throughout the universe; if He is the only Creator of mind, and that originally, whatever it is now, in the image of Him, that is one not many, though communicating to all, we see only one principle, one law, and as to its generic, not special nature, one and only one consistent mode of reasoning. If the Author of our being, has made it to us a privilege to seek after truth, and a privilege it certainly is, is it to be supposed that He would give to different minds, when minds as to general constitution are the same, different modes of finding the same thing? If truth, to use a figure, be on one point of a circumference, and we at the centre, we all know that from that centre to that point, there is one, and only one line, and that line is a straight line.* Whatever that line is, that is the general law and principle of reasoning given to me, to you, to all, and to every thing rational in our circumstances. We therefore may presume, that there cannot be any other than one general principle of reasoning in all human minds, only one right mode of finding one thing, and a general principle applicable to all things. The mind is not complex, nor the mind of one man, as to general constitution, different from that of another, nor consequently its process, which is rational, and if rational, it is according to truth, and truth is one, though comprehending many particulars; but these particulars are again referible to one; one law, one principle and one general nature; and, therefore, though there may be as many arguments as subjects, and may, according to circumstances, appear to assume diverse complexions, suited to occasion, yet doubtless the general principle is the same in all, some single and direct line of investigation existing in all human minds. As we all have the same power of thinking, of judgment, will, memory and imagination, though each of us may think, judge, will, remember, and imagine different things, yet the power and mode of doing these is the same in all, and how then can it be rationally supposed, that if the power and mode of performing these several mental acts is the same in all, that the general mode and principle of reasoning is not the same in all; and consequently there is one law, one principle, one right line existing in all to effect the same thing.

17. Though we have not, nor wish to have the temerity to

* For this idea, and many others, the author is indebted to the respectable publisher of this work.

pronounce what that line is, yet as the inquiry is important, we are inclined to come as near to that line as possible. Could we, with Norris, enter into what he calls the "ideal world," and with him inspect the secrets of many minds at once, we should perhaps find the mind of one man infering the nature of a particular from that of the universal to which it belongs; another, the nature of a consequent from that of an antecedent *comprising* it; a third, the nature of something unknown from what is known *involving* it; or something unmeasured from another which measures; or rather the measure of two from a third which measures both—or, once more, in the case of alternation admitting only of two cases, whereof one is impossible or absurd, infering that which is not impossible or absurd, which comes to the same thing. Reason admits not here, in possible cases, absurdities: it is the *abscissio infiniti*, cutting off all things impossible or absurd, until it comes, in possible cases, to what is not impossible or absurd, and that is the only class or universal in this respect to which the possible case of this alternation can rationally belong. In every one of these varied cases, the general law is the same, the generic principle is unique. Call it by what name you please, still it is infering a particular, a consequent, an unknown, an unmeasured nature from a universal, antecedent, known, and limited nature, involving, implying and measuring it. The common principle in minds that know nothing of learning, of logic or of mathematics, is "experience, matter of fact, common sense, taught me that such and such things are so, or true, and I always found what these taught me to be true." This is a case of that kind, and therefore this is true; or in other words, truth taught me this of a universal nature; I am sure that this particular belongs to that universal nature; it therefore has the properties of that universal nature.

18. Had a certain writer on Logic, whom in future, and out of regard to his feelings, who, for aught we know, may be yet, though in another country, a living author, we shall distinguish by the name of Mr. X. deferred his Treatise, until he had seen the very able work of Dr. Whateley, he certainly would not have committed himself so completely on the subject of syllogism. That Mr. X. has had certain distinguished authorities to copy, is, for him an apology, but at the same time a proof that a general misconception, involving great names, has prevailed on this subject, promoted chiefly by those who undertook to write on what they themselves did

not understand. Mr. X. is certainly at complete issue with Dr. Whately, who, for sixteen years at least, out of the five and twenty during which he was resident at Oxford, was Professor of Logic at that University, and now, if we mistake not, Archbishop of Dublin. Dr. Whately repeatedly says, "*Syllogism includes, or is, all reasoning.*" Mr. X. has not made this discovery, nor does he seem exactly to know what Logicians mean by such terms as universal, genus, species, &c. without refering himself to some genus or species in natural history, whether of beast, bird, fish, plant, &c. as if the only idea we can form of a universal nature, must be confined to this department of human knowledge. But we ask, can we form no idea, *first*, of one aggregate universality, one law or source of nature and property, from which, *secondly*, all general, special, and particular natures emanate, each having its own essential difference, and each comprising its individuals, refering back all their properties, natures, and principles, to their own class; the particular to its species, the species to its genus, the genus to its universal, and the universal to One that gives laws, natures, and properties, that govern as well as distinguish all, though diverse in their divisions, yet consistent in their universality? One sun shines in the heavens, and all the rays of light proceed only from one sun, yet they fall on ten thousand objects, comprising many genera, many species, many individuals, above, below, all round; and from thence, by refraction and reflection, proceed to the eye, giving to that eye, from one object, the idea of substance; from another, of figure; from a third, of color; and from a fourth, of magnitude; which again each divide, for example, that of color, according to the property of refraction; here the idea of red, there of blue, and yonder of green, &c. generalized into reds, blues, and greens, each of a distinct kind, expressive of a special or general law, and each comprising all its particulars, from which special or general nature, that of all its particulars are rationally infered.

18. In this general law—this one grand principle of UNIVERSALITY, co-extensive with the UNIVERSE, implying ONE CONSISTENCY co-extensive with itself; by its *comprehension** expressing the nature of all it comprises; in its *extension** admitting of division; each division, precisely in the same manner, by its comprehension declaring the principle of all it includes; and in its *extension*, allowing of subdivision; and thus

* See page 97.

on, from the ALL INCLUDING ONE to its *orders*, from the orders to their *tribes*, from the tribes to their *genera*, from the genera to their *species*, from the species to their *individuals*; or from the UNIVERSE itself to the smallest PARTICLE of matter; is to be found, THE ONE, *the only one general principle of reasoning; many objects* seen by *one eye*, and that judges or reasons by *one light*; proceeding from HIM who is ONE, ONE NATURE giving ALL NATURES; ONE INFINITE extending to ALL FINITES; ONE INFINITY OF SPACE extending to ALL MAGNITUDES; ONE INFINITE DURATION extending to ALL TIMES.

19. Then whether we are infering the nature of a particular from a universal, a consequent from its antecedent, what is unknown from what is known, or things unmeasured from what measures them; the latter, in each case, comprising all the properties infered as to any individual it includes, are we not acting by one, and only one, general principle of reasoning, proceeding from one faculty, reason, acting by one law consistent with itself? However diversified the manner, and by whatever name it may be called, demonstration, syllogism, enthymene, or sorites, yet one principle runs through, guides and governs all, showing that there is only one straight line from darkness to light, one line from error to truth. By whatever name we distinguish that which affirms or denies, a nature as to all it includes or to which it is adapted, whether universal, antecedent, or something known, yet the general idea of universality is implied, or an idea of what includes all whose nature or properties it can affirm; and by whatever term we call that which is included or adapted to another, particular, consequent, unknown, or unmeasured, yet are its properties infered from what is competent to comprehend and affirm the nature of all it includes.

20. "There is no method of teaching," said Dr. Johnson, "that of which any one is ignorant, but by means of something already known." Here then are the *antecedent* and the *consequent*. But by the *antecedent*, in grammar, might be understood the *relative*, or by the antecedent and consequent, might be understood correlative particles, the one necessarily following the other in one clause; and by antecedent and consequent, the philosopher might understand *cause* and *effect*; yet the logician, by the term antecedent, does not refer to any one act effected by one cause, but to the general law of all its acts to which he can refer any effect produced by that cause. Neither does the mathematician, when he compares lines, surfaces and solids with other lines, surfaces

and solids, always say, because this body is, in point of figure, the same with that, therefore in *magnitude* they are equal. Mere magnitude is not always his only object, but also the property of similar bodies. A thousand triangles may exist, all having the same angles, but the sides and area of each very different in magnitude, yet as to the former, the smallest is referible to the class of the larger, which in this sense is its universal. Again, as to magnitude, how do I know that A is equal to B? I cannot bring them together, they are distant, until I have the mathematician's third thing, the measure C, and finding it equal to both, it is all the universal I want; it comprises both cases, and I pronounce them equal to one another.

21. If only two things are brought together and compared, and found equal or unequal, like or unlike, it is not reasoning, it is judgment; but if a third thing is wanted, and compared first with one and then with another, and the one comparison infered from the other, it is reasoning; here are three terms, and three terms are always necessary to one syllogism, to one act of reasoning. And this is the one line or process by which all *reasoning* must proceed; *it is inference from two comparisons, or two judgments of affirmation or negation.* In all this we see only one line, one consistent law of procedure, whether it be infering a particular from a universal, a consequent from an antecedent, an unknown from a known, two things unmeasured from what measures both; or in alternation, the reductio ad absurdum, it is simply the rejection of the case from the impossible to the possible alternative, the only universal that includes it.

22. We repeat, then, finally, if truth, as before observed, "is single and indivisible," and its Author the same; if minds, as to their general constitution are so likewise, it is impossible to suppose there can be any other than one general principle in all human minds of finding the same thing. Whether this be called one law, one principle, or one line, it intimates the same thing; and if a line, that line is straight, not bent, notwithstanding to some it may appear such, any more than the straight rod can be bent, though by refraction it may appear, such, when its image is transmitted through the denser medium of water. If we still view it under the figure of a line, since all reasoning beings have been now reasoning for near six thousand years, it follows that though that straight line has not been, by men, uniformly turned in a right direction, yet it has been turned towards some object; and it is this line

that all, in one way or the other, endeavor to use; whether they see the whole line at once or not, or consequent on the medium through which they view it, it should appear bent to some, though straight to others, still is it only one line, that line straight, and always capable of being turned in that way which it is the prerogative of a free agent to direct, and for the right use of which he is responsible.

23. It seems to be one of the great privileges of rational nature, that we have come into the world on purpose to reason; by reasoning to grow; and to acquire, by reasoning, a rich variety of mental furniture, as so many gems of infinite variety in transparency and color, yet ready and in order, that when the beams of moral truth shine on a mind so furnished, they shine on diamonds not on lumber, and declare by evidence, clearer than deductive, the great and noble fruition of intellectual existence. Had the whole been intuitive evidence at once, it would have been an atmosphere, so to speak, in which free agency, or any thing short of necessity, could not exist. No victory would have been ours, the eternal triumph unknown, no *motive* but that of necessity; and impulse, common to machines, our saviour. We came into the world then for the purpose to go to reason's school, and all our life to be in one train of education, every step of which may if we will be successful, at the school of reasoning; and that reasoning within our limits, always points to what is REVEALED. Reasoning then is our business, our trade, if you please; a trade not of the store nor of the pocket, but of the mind, that shall exist when neither store nor pocket can. Reason then we must, and an effective mind, one of the most active things in the universe, cannot help it, nor desires to avoid, nor to omit that which by experience it finds to be one uninterrupted career of success, without any impediment in the way, to the attainment of every truth essential to happiness. As the main spring is to the watch, so is reasoning to the mind; and we reason from the first day that watch is wound up, to the last of deductive evidence, when the deductive shall be "swallowed up" by the intuitive, which shall be eternal, one cloudless day of everlasting light. The deductive preceding the other as the A, B, C of the spelling book, the highest volume of science; or the chilling twilight of the frozen zone, the "high eternal noon," where night and darkness shall be for ever unknown; or the faith of the feeble believer, the fruition of things hoped for; or his hopes, the SUBSTANTIAL REALITIES of eternal enjoyment when all things else shall be *shadow*.

24. If reasoning, then, is a necessary consequence of rational humanity; and mind in all, as to its general constitution, the same, it not only follows that a process, but that the same process, partial or complete, is going on in all that is mind, learned or unlearned, whether acquainted with mathematics, metaphysics, or the plough. The line is the same, whether the professor reasons or the clown, the doctor or the mechanic, the king or his subject. The former, it is true, may be able to take two steps, to the latter taking one; or more ready to separate what is specious from what is conclusive. Yet it is the same principle, attempted by all and accomplished by some. Whether this remark apply to *ancient* or *modern* times, the case is unaltered; for if mind was and is the same, its process is so likewise. The child reasons not otherwise than the father; but the latter can express the complete argument, whilst the former is not aware of the necessity of any more than its part; the logician can demonstrate to both where the fallacy is, if any exist; or, if not, the reason why the argument is conclusive; neither of which, either the child or its father, has skill competent to effect.

25. The child, the father and the logician, then, intimate three stages on the same line; and we have at once the incomplete argument, the argument, and that which is demonstrated to be or not to be an argument. For example, though B knows that Z committed Y, yet he is not aware that the law says, that "all committing the crime Y must be imprisoned for life;" and C, though aware of this, knows not that Z committed the crime Y. You say to B, "*Z must be imprisoned for life, because he has committed the crime Y.*" Here is a complete enthymeme, which would be a complete argument to C, because he is aware that such is the law; but it is not to B, who has no knowledge of any such law. You then say to C, "*Z must be imprisoned for life, because the law says that all committing the crime Y shall be so imprisoned.*" Here is another enthymeme; it would have been an argument to B, but not to C, who knows not that Z has done this. Now your two enthymemes, each of which you thought to be a complete argument, spoken to two persons, of whom the one knew not the major, nor the other the minor of the complete argument, proves to be no argument at all; and to convince both you must say,

All committing the crime Y must be imprisoned for life.
Z committed the crime Y; therefore
Z must be imprisoned for life.

If both B and C hear this together, they are convinced, because it is no longer a partial, but a complete argument, expressing the whole case, of which neither, unless he can disprove one or the other premiss, can doubt. No further example is necessary to show that whilst the enthymeme is only the half, the syllogism alone is the whole argument.

26. An enthymene, therefore, though commonly employed, is evidently an incomplete argument, or always defective, in consequence of the want of one or the other of two completories, one of which may be necessary to convince me, another to convince you. Besides this defect, either of the enthymenes composing an argument, may contain a fallacy, which is best detected by supplying the completory, to compose the entire syllogism, where, having regular rules, you are immediately enabled to apply them, to show whether the whole is an argument or a perfect syllogism, (Art. 137) or to expose a fallacy should it exist; either in consequence of one of the premises being false, an undistributed or equivocal middle, (Rules II and III page 204) illicit process, (Rule IV page 206) For an *apparent* argument and a perfect syllogism are distinct. For example, in reference to a cause to come on before the Supreme Court, information may be given to the police, that, "*All the criminals are of the party Y.*" Now it is well known that *you belong to that party;* you are, therefore, arrested, and look somewhat blue when you see the case stands thus,

All the criminals belong to the party Y.
You are of the party Y;
You are a criminal.

On inspection of the general indictment, however, you perceive that the middle term, "the party Y," is undistributed. Consequently the whole is not a perfect syllogism, according to the definition in Art. 137. The middle term being the predicate of a universal affirmative cannot be distributed, "for A distributes the subject," not the predicate. You, therefore, convert the major premiss, when the middle term becomes the subject and the case stands thus,

All of the party Y are criminals.
You are of the party Y;
You are a criminal.

Here the middle term is distributed, and the whole stands

in a regular state to be tried. But since the major proposition, "*All* of the party Y, (*not some*) are criminals," cannot be proved, the premiss cannot be supported, the conclusion does not follow, and the charge against you falls to the ground. You may, therefore, on getting out of "durance vile," tell the officer to his face, that the indictment, or argument on the strength of which he arrested you, is no better than the following—

You are an animal.
A goose is an animal;
You are a goose.

27. It is not the *mere* arrangement of three propositions into one series, that constitutes an argument, nor what is competent to declare what is, or is not true. It is not only necessary that each premiss should express the truth, but that there should be no equivocal or ambiguous word, nor undistributed middle, either of which is extremely convenient for the purpose of deception. A fallacy may exist in either premiss. This is easily detected, when the premises are in juxta-position, and subjected to the test of the rules. But a false syllogism may be expanded into a volume, where the one premiss may be a hundred pages distant from the other. The author, in this case, has a hundred pages to disguise each, by plausibility, by specious or eloquent language. The deception is artfully concealed, the poison diluted and unperceived; it composes one draught, and injures the morals and happiness of a multitude, or of a nation. And though a few may afterwards be able to detect the villainy, yet by that time the suasiveness of the compound, sweetened to the palate of sense or interest, has had time to operate, to fascinate and allure. Or should you even attempt to convince, your effort as to the many may be in vain; the passions of the animal are getting better of the faculties of the man; and moral, civil, and even national death may be the final consequence. It is a melancholy fact, that thousands exist, whose principles, if developed, could have no other tendency than to disturb society, destroy nations, and even involve themselves in the general catastrophe.

28. Or you, yourself, may be engaged: you may advance an argument, or you may be attacked by an adversary. It may be a case that touches your pocket, your head or your heart; your family and all of consequence to you may be concerned. A sophistry, perhaps, undetected by any, is concealed, and calamitous consequences are the result. That this is no un-

common case, the records of sorrow, imprinted deeper by the widow's tears, and the children's destitution, too often testify. In such a case, then, or in any other, is the facility of detecting a fallacy of no consequence to you, whether the subject refer to yourself, your family or friends, or to the society to which you belong? What can be your objection to the acquisition? Works, we know, have been published on the art of logic, to no other purpose than to represent that to be complex and mystified, which is easy and simple in itself. Logic is no scare-crow, though scare-crows exist. And it is these scare-crows themselves that have been dressing up logic in an old suit of their own clothes, that never could frighten any thing but crows. We declare on the very title page of this work, "the art of reasoning *simplified*," and therefore mean to scare none. Read Logic through once attentively, and refer to the more essential parts of it when occasion requires. Afterwards, we intend to give a proof, by the Synopsis that shall appear in this work, that all the most important rules necessary for every practical purpose, can be, for the memory, compressed into one or two pages. And he that cannot overcome this, can overcome nothing.

29. That ordinary *reasoning or argumentation may be improved by art*, we have already had abundant opportunity to exemplify. No adage is more common, than that we should not judge by appearances. Every thing is by no means an argument that assumes the appearance of one. There is not a fallacy or deception practised on earth, but what has been able at one time or other, to shuffle itself into a specious garb resembling argument; and Logic is simply the art of taking off the mask, and exhibiting the thing in its native deformity. The banker keeps his scales, the chemist his tests, and the logician his rules, more important than either, to enable him, when occasion serves, to say, "thou art weighed in the balance, and found wanting." Men, too generally, have not only neglected these rules, but other means, to enable them to rally and coalesce at the point of truth, to shame and put down error and deception out of the world. Could such noxious weeds, this multiplied delusion, have existed, had this not been the case. This language is not too strong: only examine it seriously, or deny that truth is out of our reach, and affirm that we are necessitated to be the victims of error. And is not the cause of truth, and our own cause identical? But if truth be attainable, and attainable it is, as sure as we are rational, where is our zeal? If we have little or none, or if

we are idle, supine or poltroons in its cause, can we wonder that thousands are at work, and that on every day, in disseminating every species of fallacy calculated to undermine, and ultimately overthrow every department in which our interests and human welfare are at stake? We must be aware of this, if our eyes are open; a thousand facts daily testify, and meet us wherever we go. A public spirit, armed with proper means, and engaged in a noble cause, is an excellence, whose benefit shall extend beyond the limits of our own fire-side to bless the world.*

30. What is the whole of one process of law, from the legislative body that enacts a law, to the judge that pronounces a sentence agreeable to it, but one syllogism. Here surely is reasoning, and one entire act of this reasoning is precisely one syllogism. And it is a confirmation of what we have said, that all reasoning, when complete, is only one line, one principle. And if the highest authorities in the land, for surely they not only know what reasoning, but what *one act* of reasoning is, have naturally fallen into that line, and by that line only, regulate all their judicial acts, it is a proof to the world, that all reasoning, *when complete*, is one and the same line; and one act of reasoning is *the whole* of that line, which must be used again for another act, a part for common occasions, but the whole of it, or the whole of the same thing in all formal acts, as in law, is required; so that in law, we see what that whole is. One act or process of law demands the whole line; the common enthymeme, only a part of that line, is not sufficient here; the law requires not a part, but the whole. The legislature enacts the major proposition, or first part of that line, and no more; for example, it enacts, "*All committing the crime Y, are to be imprisoned for life*,"— and this part contains the middle term or universal, "*all committing the crime Y;*" the advocates and witnesses are concerned only to make it clear to the jury that the minor (Z) is contained in the middle term; that is, if Z did, or did not, commit the crime Y; and the jury, when certain of the fact, that Z is included in the middle term, proclaim the second part of the line, or minor proposition, by saying, "*Z committed the crime Y.*" Thus two parts of one line are passed over, and the judge has only to complete the same line, by saying, "*Z is to be imprisoned for life*," and the whole

*Judges, v. 23. "Non nobis solum nati sumus." Cic.

of one process of reasoning, or of one line, or of one law, stands thus:

Legislature. All committing the crime Y, are to be imprisoned for life.
Jury. Z. committed the crime Y.
Judge. Z. is to be imprisoned for life.*

31. But Mr. X. to whom we have already adverted, blames the syllogism, because it expresses an obvious truth; which differs very little from censuring it for rendering truth too evident. The conclusion of the preceding syllogism is, "Z *is to be imprisoned for life.*" Now, how came this to be obvious? Of course from the premises. Are the premises then not allowed to express their own consequence, lest truth should become too obvious? Or does he mean that we could dispense with the whole formality of the syllogism, by being content with the common enthymeme? Which of the two enthymemes? Is it, "All committing the crime Y, are to be imprisoned for life; therefore Z is to be imprisoned," &c.?

But this cannot convince him who knows not that Z has committed Y. Or is it the following?

Z committed Y; therefore Z is to be imprisoned for life.

Neither does this express any reason to him who knows not that such is the law. Consequently neither is complete. The enthymeme certainly may serve for common occasions, but the question refers here not to an incomplete, but to a complete argument, and by rejecting the syllogism we cannot be supplied by any other complete form. "All demonstrations in mathematics," says Mr. Hedge, "proceed on the principle of the syllogism, that *whatever may be affirmed of any genus, may be affirmed of all the species included under it.*" And when one of the completories in mathematical reasoning is omitted, it is what has been proved before, is refered to, and the reader supplies it. But the syllogism presents the whole. To produce a complete argument, then, does Mr. X. propose to substitute the two enthymemes taken together, instead of one syllogism? With what advantage? The two contain *four* propositions; the syllogism only *three.* Nor would the facility of detecting a fallacy be thus promoted. A syllogism is a form already provided with rules. When the premises are known to be true, and that form stands the examination of the rules, it is impossible that a fallacy can remain undetected.

32. But because, in the dark ages, the syllogism was abused to the unimportant purposes of wrangling, therefore, says he,

* Another proof is, that all regular indictments are syllogisms.

it ought to be rejected. There is not a single good thing within the reach of man, but what has been abused; on the same principle, then, according to the logic of Mr. X. we must reject all good things. Dr. Whately, however, somewhere observes, that instead of syllogism being a means of promoting wrangling, it is, when rightly understood, the shortest way of putting an end to all wrangling. Neither are all men, as he evidently supposes, if they admit the syllogism, compelled to use it for every ordinary purpose where the common enthymeme may serve. But his chief difficulty is in not being able to perceive that *all reasoning is infering a particular from a universal.* That is, because he understands not what is the logical idea of universality, or *one whole distinguished by an essential difference, not an accident, peculiar to all the individuals it involves.* The very examples he quotes are, however, unfortunate to his own position. "A mathematical demonstration," says he, "consists of the *comparison* of quantities of the *same species.*" *Mere* comparison, however, implies only judgment, not reasoning; in the latter, three terms are necessary. But it is the comparison of quantities of the *same species.* This is the very point for which we contend. Mr. X's species is the same thing as our universal, or any thing from which the properties of all quantities having the same essential difference on which those properties depend, are infered. For example, a triangle is a figure bounded by three right lines containing three angles. Now, "a figure" expresses the genus; "bounded by three right lines containing three angles," expresses the *essential difference;* and the two together, denote the species of figure we have in contemplation, from which all the *properties* of triangles are infered, not from their *accidents,* which may refer to a thousand different *sizes, material, color,* &c. Here the object is the species of figure, *not magnitude,* and consequently the common properties inseparable from that figure common to all it comprises. This, then, is the universal comprising all its particulars, an infinite number, without reference to any magnitude, or to what in the present case is *accident,* not a *property* depending on *essential difference.* (See Art. 33, 34 and 35.) All things corresponding to this figure, thus distinguished by its essential difference from all others, are triangles, or particulars of this only one universal, comprising all adapted to this general character, and possessing properties, not accident, common to all. But, continues Mr. X, "figures are compared with figures, angles with angles, and lines with

lines." Another example of his confounding judgment with reasoning. *Judgment needs only two ideas, reasoning three.* Here is a rod, there is another, one is silver, the other wood; one is white, the other is painted green; but I want to know if they are equal; consequently *magnitude* now becomes the essential difference I have in view, not an accident, whether material or color. I *compare* them together, and find them to be equal in length; the material or color in this case not altering my judgment. Reasoning, as yet, has not begun, for I can express the whole of this mental act by one proposition, viz: "the rod A is equal to the rod B." But yonder is a *stone* column at the east corner of my estate, which call X; and there is another *brick* column, Z, at the west corner. I want to know if they are equal in height; i. e. magnitude. Magnitude now is the property I contemplate, not material whether stone, brick or wood. What am I to do? I cannot carry X to Z, that one act of judgment, or simple comparison may suffice; I must reason, and I cannot reason without a third idea or term. Give me then a rod, call it Y; I mind not in this case whether it is of silver or whether it is of wood, or whether it is white or painted green; *magnitude* is my object, and if in this it correspond to the height of both X and Z, it is my middle term, my universal, something that in the property I aim at comprises both cases, and all other cases that will correspond to the same universal, and I can with this universal, or with these three terms, reason and say,

Y is eqnal to X,
Z is equal to Y; therefore
Z is equal to X.

Now the Y I choose, my middle term, is a universal in magnitude; it precisely corresponds to the same magnitude of all other things in the universe, whether made of wood, stone, metal, or of any other thing; and, as to magnitude, is the only universal I need for all similar purposes. The yard-wand of a dry goods store, is the store-keeper's middle term, his universal, as to magnitude, without minding its material or color. Should that piece of *woollen* cloth be found, by it though made of *wood*, to contain ten times its length, and that piece of silk the same, he knows from this middle term, that the length of the woollen cloth is equal to that of the silk; his reference here being not to the accident, *woollen, wood or silk,* but to the property he contemplated, magnitude, decided by his middle term the yard-wand, made of wood. Should he,

however, contemplate material not magnitude, he will then refer to another universal, where that is the essential difference or property, when magnitude becomes an accident, as it was where the general property of all triangles, not their size, was the property or subject of reasoning.

33. He adds, "an inquiry concerning justice or charity, *compares* these virtues with the principles of reason, equity, the laws of the community, and the situation of persons." The same thing precisely; that is, "the principle of reason, equity, the laws of the community, and the situation of persons," collectively combine to constitute two precepts of moral action, two *universals*, (middle terms) from which I infer that such an act, (the minor term,) or such another (the minor of the second universal) would be to A, an act of justice, to B an act of charity. But "a process in the *arts* refers to the theory of the arts, and to the example of the most reputable and successful practitioners." That is, the theory of an art, as established by the investigation and practice of the most reputable practitioners, is the *universal*, (or *middle term*, which call Y) of which its known effect, (or *major term*, X) must be predicated. The process I am going to employ, Z, *the minor term*, is according to that theory; therefore, the process Z will be attended with the effect described by that theory, or of which the same major, X, may be predicated; this comes to the same thing, the same unaltered law of universal reasoning; for

All processes under the theory Y will be attended with the effect X.
The process Z is a process under the theory Y; therefore
The process Z will be attended with the effect X.

34. There can be no difficulty whatever in selecting a universal, whose character comprises the properties of a minor to which the same predicate must apply. Its *essential difference*, (art. 33.) is what contradistinguishes it from every other universal; and of which essential difference the properties (art. 34.) of it and all its particulars having the same essential difference, are the inseparable attributes or consequences. An accident, (art. 35.) in such case, is out of the question; it is what may or may not belong to any individual of that universal without altering its essential character, or altering what unites it with its own general nature. Yet Mr. X. seems unable to form any such general idea, or to make any such distinction, except he refer himself to some department of natural history, where he can contemplate beings, some having two feet, others four, one covered with hair and another

with feathers, whether bird, or animal. Here he is quite at home. Some animals there are that are nine days old before they get their eyes open; and we hope that Mr. X's. nine days were over before the publication of Dr. Whately's work; after which we trust he would no longer wink as an owl in the light of the sun.

CHAP. VII.

On Fallacies.

(Art. 172.) A FALLACY is that incomplete or apparent argument which, in consequence of an ambiguous or undistributed middle, of false or improper premises, of irrelevant conclusion, or of any violation of the rules of syllogism, affirms or denies contrary to truth.

1. A fallacy is either an incomplete or apparent argument; i. e. either the enthymeme or the *apparent* syllogism; but chiefly the former. The enthymeme is the chief atmosphere of the fallacy. A *mere because, therefore, wherefore,* &c. are the principal venders of counterfeits, and dispose of them daily by wholesale. Out of a thousand fallacies, it is incuring no risk to affirm that nine hundred and ninety-nine are enthymemes. It is very common to observe, that an enthymeme is a convenient argument; but it is at the same time convenient for other purposes. Whereas, were any suspected enthymeme reduced to the form of the syllogism, and subject to the test of its rules, it would be impossible, if the truth of the premises be known, that a fallacy should remain undetected. It is true that a fallacy is commonly exhibited and exposed by the syllogism, which does not prove that the fallacy has any peculiar attachment to the company of the syllogism, but what nondescripts the syllogism fishes out of the enthymeme. The enthymeme tolerates their existence, the syllogism terminates it. If a large part of the world has been deceived down to the present day, which every sensible man admits, it has *not* been deceived by the *perfect* syllogism, but by apparently inferential particles, and coin easily passed off by the score, not requiring the trouble of examination.

2. If all correct reasoning be one law, one principle, or one line, fallacy must be something not on, or what is bent out of that line. In short, it is that on which truth never has, nor ever will be found. But to change the figure; fallacy is the only enemy we have, and its enmity is assiduous. It waits on us in the parlor, attends us to the store, and pursues us to the exchange. In short, we have its services at all times and in all places, when and where it can keep on the mask; and that life is best spent, and the most conducive to happiness, that is so directed as to get rid off with the least delay, the last of this only enemy to our moral and intellectual felicity.

(Art. 173.) As one act of reasoning involves three terms, two premises and one conclusion, a fallacy is either in one term, the premises, or in their illogical connection with the conclusion.

1. "When a proposition is by means of syllogisms collected from others more evident and known, it is said to be *proved;* so that generally the proof of a proposition is a syllogism, or series of syllogisms, collecting that proposition from known and evident truths. But more particularly, if the syllogisms, of which the truth consists, admit of no premises but definitions, self-evident truths, and propositions already established, then is the argument so constituted called A DEMONSTRATION; whereby it appears that demonstrations are ultimately founded on definitions and self-evident propositions."

2. But the evidence of this demonstration may be reduced to one simple principle, whence, as a sure and unalterable foundation, its certainty may in all cases be derived. All syllogisms whatever are reducible to the first figure. Therefore any demonstration may be considered as deduced from a series of syllogisms all in the first figure; where, in a brief compass, we may contemplate on what principle the evidence of all demonstrations is derived, and by which fallacy may be with equal certainty excluded.

3. Of the first figure, the middle term is the subject of the major proposition, and the predicate of the minor. The major is always an universal proposition, and the minor always affirmative. The predicate of the major proposition is the same as the predicate of the conclusion; and that predicates of the minor which is contained in a distributed middle, what is predicated of it in the major proposition. So that the whole of this mode of establishing truth and excluding error, or detecting fallacy, is founded on obviously correct principles, viz:

"*Whatever may be affirmed universally of any class or distributed middle, may be affirmed of any individual or individuals contained in that class;*" (i. e. having the same genus and essential difference; for if it have these it will have the same properties.) And, "*whatever may be denied universally of any class or middle term distributed, may, in like manner, be denied of any individual or individuals contained in that class.*" On these two principles, the whole of syllogism is built; and they are themselves no other than two self-evident truths or axioms which it is impossible to deny without contradiction. To say that all triangles are figures bounded by three lines including three angles, but that some are not so bounded, is as plain a contradiction as to affirm that it is possible for the same thing, in the same place, and at the same time, to be and not to be. To deny, therefore, the truth of a perfect syllogism, whose terms are free from all ambiguity, or properly limited by correct definition, the truth of whose premises are known or previously proved, and the conclusion *logically* deduced, is to deny a principle as universally evident as any comprehended by the human understanding.

4. Consequently a demonstration is a series of syllogisms, all whose premises are either definitions, self-evident truths, or propositions already established. Definitions are identical propositions. We may distinguish the meaning of a word from that of any other, by a NOMINAL DEFINITION (art. 43) or distinguish a term from any other by a logical definition (art. 48.) On inspection of the argument we have in hand, *if any term be undefined, or capable of being taken in more senses than one, it is necessary that it should, before we proceed, be so limited by definition, as to render it impossible that that word or term be taken for any other.* This alone cuts off the whole genus of equivocal and ambiguous fallacies, of which we shall find many species.

5. "Self-evident propositions appear true of themselves, and leave no doubt or uncertainty in the mind. Propositions before established, are no other than conclusions, gained by one or more steps from definitions and self-evident principles; that is from true premises, and therefore, must needs be true. Whence all the previous propositions of a demonstration being manifestly true, the last conclusion, or proposition to be demonstrated, must be so likewise. So that demonstration not only leads to certain truth," *but if correctly conducted, excludes fallacy.* "One uniform basis of certainty runs through the whole, and the conclusions are every where built on some

one of the two principles, themselves self-evident truths, as the foundation of all our reasoning. And thus the certainty of demonstration is reducible to one simple and universal principle, which carries its own evidence, and is the foundation of all syllogistic reasoning.

6. "Demonstration, therefore, serving as an infallible guide to truth, and standing on so sure and unalterable a basis, it is impossible to deny, that the rules of Logic, when duly applied, furnish a sufficient criterion to distinguish truth from falsehood. A demonstration, therefore, is, in the whole a concatenation of syllogisms, all whose premises are definitions, self-evident truths, or propositions previously established. *To judge, therefore, of the validity of a demonstration, we must be able to distinguish whether the definitions that enter into it are duly limited, and descriptive of the ideas they are intended to convey; whether the propositions assumed without proof as intuitive truths, have really that self-evidence to which they lay claim; whether the syllogisms are drawn up in due form and agreeable to their laws; and in short, that no demonstrable propositions serve any where as premises, unless they are conclusions of previous syllogisms.* Now it is the business of Logic, in explaining the several operations of the mind, fully to instruct us in all these points. It teaches the nature and end of definitions, and lays down the rules by which they ought to be formed, (page 68.) It unfolds the several species of propositions,"* and the necessity and nature of distribution (page 96) and finally it prescribes rules for the syllogism (page 208) which being duly applied, each term being limited by definition, or distribution, and the truth of the premises being known or demonstrated to be relevant to the conclusion desired, the establishment of truth and exclusion of fallacy are the necessary consequences.

7. Would we guard against the introduction of fallacy, it will be necessary,

First. To see, whenever necessary, that the terms are so limited by either nominal or real definition, (art. 48, note 7) as to prevent the possibility of any of them being understood in more senses than one. And "as the terms in every syllogism are usually repeated twice, it will be necessary that they be taken precisely in the same sense in both places." If a term be a number, it should be stated whether it is to be understood in the collective or distributive sense. If all important terms entering into contract between one man and

* *Duncan.*

another were limited by definition, it would frequently prevent much legal litigation and expense. Mathematicians always commence their works with definitions, and afterwards take care to use no term but in the sense already defined.

Secondly. The whole syllogism, according to the six rules already given, (page 203 to 207) should be examined. As to the premises, if our object be not only the mere regularity of the form of the argument, but also the verity of the conclusion, we should be aware, 1st, that they are true, either definitions, self-evident truths or axioms, or propositions previously demonstrated to be true. 2dly, That the premises are not unduly assumed, nor irrelevant to the conclusion.

Thirdly. We may easily, by the mnemonic lines, as already explained, reduce all syllogisms to the first figure, which is most agreeable to the general principle of Aristotle, when we shall find, if regular, that the major term of the conclusion MUST BE predicated of its minor, in consequence of that minor *being contained* in a DISTRIBUTED MIDDLE, of which *the same major is predicated.* This effectually provides for Dr. Watts' rules to guard against fallacy, viz: "that the premises must contain the conclusion;" or, in other words, "one of the premises must contain the conclusion, and the other must show that the conclusion is contained in it."

8. The six rules to which we have alluded, (pages 203 to 207) and the mnemonic lines (Art. 152) are all that are deemed necessary by most writers on logic, to enable us to ascertain the regularity of any syllogism, and consequently to detect any fallacy. The mnemonic lines alone *are sufficient* to intimate what are the only admissible moods in each figure. Dr. Whately has not deemed any thing further on the subject necessary. Some, however, in addition to the six *general* rules, applicable to all moods and figures, and the mnemonic lines, which sufficiently point out what are the only allowable moods, furnish *special* rules for each figure, viz:

Special Rules for the Syllogisms of each Figure.

FIRST FIGURE.

(Art. 174.) RULE I. *The minor premiss must be affirmative, and the major universal.*

1. For were the minor proposition negative, the major should be affirmative, since both the premises cannot be negative, by the fifth *general* rule (Art. 143.) And if one of the premises were negative, so would also, by the sixth general

rule, (Art. 144) the conclusion, whose predicate, the major term, in that case would be distributed, (for E or O distribute the predicate) which would be a term distributed in the conclusion not distributed in the premises, contrary to Rule IV. (Art. 142.)

2. In the minor proposition the middle term is predicated of the minor term, and as the minor proposition is affirmative, the middle term will of course be there undistributed, and since it must be distributed in one of the premises, the major proposition, having the middle term for its subject, must necessarily be universal, for neither I nor O distributes the subject.

SECOND FIGURE.

(Art. 175.) RULE II. *One premiss and the conclusion must be negative; but the major universal.*

1. If a premiss be negative, so must the conclusion, according to Rule VI. (art. 144.) In the second figure, the middle term is the predicate of both premises. Consequently were they both affirmatives the middle term would remain undistributed.

2. The predicate of a negative conclusion is necessarily distributed, which would be an illicit process of the major term unless it were distributed in the premises; and that is effected by that major term being the subject of a universal in the major proposition.

THIRD FIGURE.

(Art. 176.) RULE III. The minor premiss must be affirmative and the conclusion particular.

1. Two negative premises, as already observed are inadmissible; therefore, were the minor negative, the major proposition must be affirmative, while its predicate which is the major term would be undistributed, and as the conclusion, in this case, would be negative, the same major term in it would be distributed; that is, there would be *an illicit process of the major* in the conclusion not distributed in the premises.

2. Because the minor proposition is affirmative, the minor term, here its predicate, remains undistributed: but it would be distributed in a universal conclusion, which would be *an illicit process of the minor.*

FOURTH FIGURE.

(Art. 177.) RULE IV. If the major premiss be affirmative, the minor must be universal.

1. If the major proposition be affirmative, the middle term, which in this case is its predicate, is undistributed, and since it is necessary that it should be distributed once in the premises, the minor proposition, where the middle is the subject, must be universal; since no particular proposition distributes the subject.

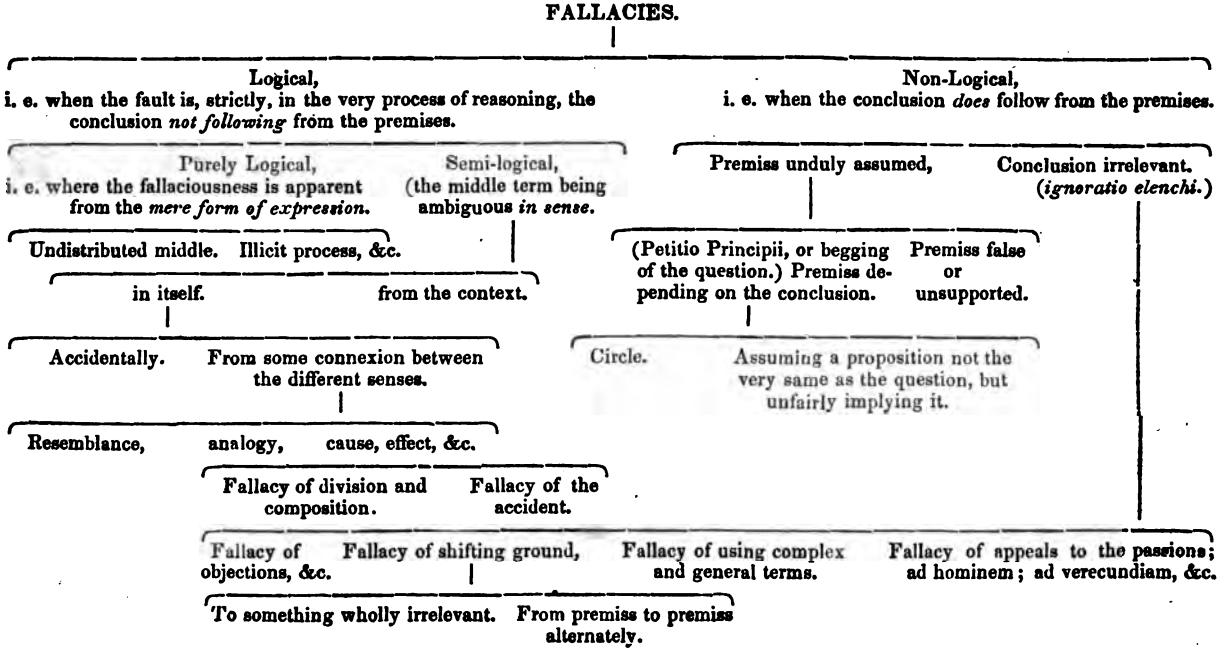
(Art. 178.) RULE V. If the minor premiss be affirmative, the conclusion must be particular.

1. The minor term being the predicate of the minor premiss, if that be affirmative, the minor term remains undistributed; there would therefore be an illicit process of the minor term in the conclusion of which it is the subject, were that conclusion universal.

(Art. 179.) RULE VI. If either of the premises be negative, the major must be universal.

1. For if any of the premises be negative, the conclusion, by the sixth general rule, is negative, where the major term its predicate is distributed, which therefore requires the major premiss of which it is the subject to be universal. In a particular proposition the subject is undistributed.

2. Dr. Whatley seems to be the first that has attempted the classification of fallacies. This is a matter of some difficulty. For whatever system be adopted, cases are not uncommon where a fallacy may evidently belong to more than one class, and transgress several rules. His division is into the logical, and non-logical fallacies. By logical fallacies, he means those wherein the conclusion does not follow from the premises; and by the non-logical, those whose conclusion does follow but from wrong premises. The logical again, he subdivides, into those which are *purely logical*, or where the fallaciousness is apparent from the mere form of expression; and into the semi-logical whose fallacy results from the middle term being ambiguous in sense, &c. The annexed table presents his entire scheme.


FALLACIES.
Logical,
i. e. when the fault is, strictly, in the very process of reasoning, the conclusion *not following* from the premises.
Non-Logical,
i. e. when the conclusion *does* follow from the premises.
Purely Logical,
i. e. where the fallaciousness is apparent from the *mere form of expression.*
Semi-logical,
(the middle term being ambiguous *in sense.*
Undistributed middle.
Illicit process, &c.
in itself.
from the context.
Accidentally.
From some connexion between the different senses.
Resemblance, analogy, cause, effect, &c.
Fallacy of division and composition.
Fallacy of the accident.
Premiss unduly assumed,
Conclusion irrelevant.
(*ignoratio elenchi.*)
(Petitio Principii, or begging of the question.) Premiss depending on the conclusion.
Premiss false or unsupported.
Circle.
Assuming a proposition not the very same as the question, but unfairly implying it.
Fallacy of objections, &c.
Fallacy of shifting ground,
To something wholly irrelevant.
From premiss to premiss alternately.
Fallacy of using complex and general terms.
Fallacy of appeals to the passions; ad hominem; ad verecundiam, &c.

2. It will tend to simplify the whole of what is specified on the preceding table, to arrange fallacies into three principal kinds, in this case necessarily genera, since each will contain its species, and a species will occasionally have its varieties.

(Art. 180.) The genera of FALLACIES are three: I. Fallacy resulting from *ambiguity* in one term; II. Fallacy from a term *undistributed;* and III. Fallacy from *improper premises.*

CLASSIFICATION, &c. OF FALLACIES.

GENUS I. *Fallacy from ambiguity in one term.*

(Art. 181.) The first genus of fallacy is that which comprises all cases where that fallacy results from an equivocal word, or ambiguity in one term: its species are, 1, the fallacy of similar expression; 2, of interrogation; 3, of equivocation; 4, of division and composition; and 5, of the accident.

1. The whole of these can only arise from the want of previous definition, and admit therefore of one remedy, i. e. so to limit by definition the term as to prevent its being taken in more senses than one; which will generally lead to the discovery that there were, in sense, four terms in the argument instead of three, and that one yet remains agreeing only with the sense rejected, which must in consequence be also excluded.

(Art. 182.) The fallacy of similar expression is that which arises from words nearly related to one another by etymology, or the grammatical structure of the language.

1. This species is commonly called "*fallacia figuræ dictionis.*" Paronymous words, are such as belong to one another, as noun, adjective, verb, &c. of the same root; though they vary in sense, yet in sound are so similar, as frequently to pass for what are identical. Such are *murder, murderer; project, projector; presume, presumption; art, artful; design, designing; faith, faithful,* &c.; the following are examples.

Murder should be punished with death.
This man is a murderer.
This man should be punished with death.

However just, as in this case, the conclusion is, yet this cannot properly be called an argument; for the term "murder" is certainly not a proper middle term to contain the minor.

Projectors are unfit to be trusted.
This man has formed a project.
This man is unfit to be trusted.

This is equivalent to four terms. The bad sense commonly attached to the word *projector*, is not implied in the term project.

(Art. 183.) The fallacy of interrogation is that of asking several questions which appear to be but one, in order to obtain, relative to one term, an answer suited to the design of the sophist.

1. The refutation is, to reply *separately* to each question, to detect the ambiguity. It is not uncommon in reasoning to state an equivocal argument in form of a question, so worded that there is little doubt which answer will be given; but if there be such a doubt, a designing sophist will not fail to have two fallacies ready; as in the question "whether any thing vicious is expedient?" The term "expedient" is ambiguous, and sometimes expresses what is conducive to temporal, at another to eternal good. To whichever sense an answer is given, the sophist may have a fallacy of equivocation, founded on that sense. Should the answer be given in the negative, his argument may stand thus:

What is vicious is not expedient.
Whatever conduces to the acquisition of wealth is expedient.
Whatever conduces to the acquisition of wealth cannot be vicious.

2. But should the answer be given in the affirmative, the ground may be changed thus:

Whatever is expedient is desirable.
Something vicious is expedient; therefore
Something vicious is desirable.

3. All that is requisite in this, and in all similar cases, is to expose the ambiguity of the term. Man in argument has to do with sense, not sound; and if a word has more acceptations than one, (for example, teneo or testudo in Latin) it must be by definition, limited to that in which we intend to take it.

(Art. 184.) The fallacy of intrinsic and incidental equivocation is that which arises either from what is equivocal in the word itself, or is derived from a context, in which it has a different sense, or is differently applied to what it is in another.

All that believe shall be saved.
The devils believe; therefore
The devils shall be saved.

1. This offends against the very first rules of syllogism; for it has four terms. "Believe," in the major premiss, is taken to signify "to believe with the heart unto righteousness," such a belief as is attended with a moral and saving influence; whose fruit is "loving obedience," which cannot exist without consistent morality of the highest order. But in the minor the same term is employed to signify to believe any abstract truth, or one in which we have no such interest, as to produce "righteousness, peace and joy." Very differently to this do the devils believe; they "believe and *tremble.*" The Christian believes. In whom? In Christ. The Mussulman believes. In whom? In Mahomet. But what has the one to do with the other? And I believe that two and two make four, or that Cæsar passed the Rubicon; but that belief will not save me

2. Words are capable of more meanings than one, either, 1. By *accident*; as *light* signifying the contrary to heavy, and the contrary to dark: *bear*, a quadruped, a northern constellation, or the name of a dog. 2. From its *first and second intention;* as, *line* in the military or naval art, signifying, a form of drawing up troops or ships; in geography, a certain division of the earth; in mathematics, the shortest distance between two points; in fishing, a string to catch fish; in ethics, a rule of conduct. 3. *From resemblance;* thus *blade*, as a blade of grass from its resemblance to the blade of a sword; dove-tail in joinery from its resemblance to the tail of a dove. 4. From analogy; as *sweet* taste what gratifies the palate; a sweet sound that pleases the ear: so the *leg* of a table, the *leg* of an animal; the *foot* of a mountain, the *foot* of a man. 5. Metaphorically; as a ship *ploughing* the deep. 6. In various other ways; as *Homer*, the poet; *Homer*, the Iliad and Odyssey. Have you read Pope? Pope was a man. *Learning*, acquiring knowledge; *learning* the knowledge itself. *Post*, a pillar; *post*, a stage from one pillar to another; *post*, the conveyance that travels this stage; "my days are swifter than a *post:*" not the former surely. *Premises*, the two first propositions of an argument; *premises*, a building. A says "Cæsar was a *great* man. B differs from him; because they two by the term great, or great man, do not mean the same thing. "His meat was *locusts.*" What locusts? the insects, or the fruit or pods of the locust tree?

(Art. 185.) The fallacy of division or composition is that where the middle term is used in one premiss collectively, and in the other distributively.

1. If the middle term is used collectively in the major, and distributively in the minor premiss, it is the fallacy of division; the reverse of this is the fallacy of composition; the fallacy of division, is such as in the following example.

The primary planets are seven.
Mercury and Venus are primary planets.
Mercury and Venus are seven.

After "primary planets" in the major, write collectively, the sense implied; we then have four terms, and the argument falls as useless.

The fallacy of composition is such as,

Two and three are even and odd.
Five are two and three.
Five are even and odd.

After two and three in the major, write "distinctly," the sense of the major; and the same consequence follows.

2. But says the necessarian,

He who necessarily goes or stays, is not a free agent.
You must necessarily go or stay; therefore
You are not a free agent.

This is no better than

He who has the choice of one alternative is not a free agent.
You have the choice of one alternative; therefore
You are not a free agent.

i. e. a choice, and not a free agent!

3. And the devotee of fortune's wheel says,

The gaining of a high prize is no uncommon occurrence.
What is no uncommon occurrence, may reasonably be expected; therefore
The gaining of a high prize may reasonably be expected.

"The conclusion when applied to the individual must be understood in the sense of 'reasonably expected by a certain person;' therefore, for the major premiss to be true, the middle term must be understood to mean, 'no uncommon occurrence to some one particular individual;' whereas for the minor, (which has been placed first, for illusion,) to be true, you must understand it of 'no uncommon occurrence to *some one or other;*' and thus you have the fallacy of composition."

4. Dr. Whately says, "there is no fallacy more common, or more likely to deceive, than the one now before us; the form in which it is most usually employed, is to establish some truth *separately*, concerning *each single* member of a certain class; and thence to infer the same of the whole *collectively;*

thus some infidels have labored to prove concerning *some one* of our Lord's miracles, that it might have been the result of an accidental conjuncture of natural circumstances; next, they endeavour to prove the same concerning another; and so on; and thence infer that ALL of them might have been so. They might argue in like manner, that because it is not very improbable one may throw sixes in any one out of a hundred throws, therefore, it is no more improbable that one may throw sixes a hundred times running."

5. This is also the logic of the spendthrift.

This, that or the other expense, I am able to afford.
This, *added* to that and the other, is this, that and the other expense.
This, that and the other expense, I am able to afford.

Stop! this, *added* to that and the other, will ruin you.

6. In this fallacy too, the selfish and the unfaithful, find their Gospel.

Neither to this charity, or duty, nor to that, nor to the other, am I bound to contribute or perform.
These charities and duties belong to this, that and the other, &c.
These charities and duties, I am not bound to perform.

A universal from a particular, and four terms, as in the former case: the practical consequence of the fallacy, is all charities and duties may be dispensed with.

(Art. 186.) The fallacy of accident is that which, comparing an *essential* with an *accidental* difference, infers that to be true in one case which is not in the other.

1. For *essential* and *accidental* difference, see Art. 33 and 35. This fallacy involves two varieties; 1st, Inference as to *accident* from *essence*. 2d, Inference as to *essence* from *accident*.* Logic countenances neither of these; but its rules, already given, prohibit both. "Truth is single and indivisible, but error is various and multiform." No wonder then that men have found out more ways of evading truth than there were windings in the Cretan labyrinth.

2. Now, according to the rules of logic, a middle term, that is our universal, is defined and limited; 1st, by its genus; 2dly by its essential difference, (not accident) which distinguishes it from every other genus or universal: to introduce accident

* Or divided in the old works on logic into, 1st, "a dicto secundum quid, ad dictum simpliciter," and 2dly, "a dicto simpliciter ad dictum secundum quid."

in such case is to introduce confusion, the fool's atmosphere. It is true, if we change our universal, what was *accident* in the one case, may become essential in the other. For example, the universal quadruped, its genus is *animal;* its essential difference, or what distinguishes it from any other universal, is *having four feet,* and the definition limiting it, is *an animal having four feet;* for all such, no matter what color, or what size, with or without horns, cloven feet or not, in this case, accident, are quadrupeds. The case however is possible, through *accidental* circumstances, or a circumstance not *essential* to the genus quadruped, that one or more individuals may be maimed, or absolutely without one of the four legs essential to the genus. And if it be necessary to consider these distinctly, or to have a distinct universal including all such cases, we limit it by an essential difference involving all the cases, as a *maimed* quadruped, when what was before *accident* is *essential* to a distinct character or universal.

3. The cases of this gross fallacy, commonly quoted, are such as the following:

All things bought in the shambles are eaten by man.
Raw meat is bought in the shambles.
Raw meat is eaten by man.

Here that is infered to be true *without,* which is only true *with* the accident, (*cooked or prepared*) since most things are eaten only some how prepared, by one who has been defined to be, "*a cooking animal,*" or the only animal that cooks. But the universal, or middle term, from which this is infered, (all things bought in the shambles) does not involve this accident as its essence. The proper universal in this case would be, "*all things bought in the shambles and prepared,*" such we might predicate are eaten by man: the *accidents* then would be, *roasted, boiled, seasoned,* &c. which universal would of course exclude raw meat. Again:

All things that have been injurious or capable of being abused, should be rejected.
The medicine A has been injurious, and capable of being abused.
The medicine A should be rejected.

The true universal in such case is, "all things that have been *accidentally* injurious, or *occasionally* capable of being abused;" from which universal men would, therefore, reject first the one thing and then the other, as suited their caprice or prejudice, on account of what may be true as to the accident, or in a few cases; but not as to what is essential in its general effects and character. Of course from a premiss of

this nature, since there is not one good thing but what has been abused, we must conclude to reject all good things.

4. Though a fallacy of this nature, when stated with the least propriety, is so gross that even a child would reject it, yet in the common enthymeme it is so elliptically expressed that its absurdity is not perceived; and it is scarcely possible, gross as it is, to mention another limb of deception, as even the newspapers of every day evince, that passes more current than this. Opium, *improperly used*, in five cases, has been injurious; but, *properly used*, useful in a hundred; therefore reject it. Money of the description X has been capable of being abused, by beings not men, in ten cases; but useful to trade and to the honest laborer in a thousand; therefore reject it. The Bible itself has been abused, in heresies, &c. in ten cases, but useful to the sincere in ten thousand; therefore reject it. The institution B is said, in some dark hour, to have taken one or two false steps; nevertheless, meanwhile, to the community at large it has been beneficial in a thousand cases, so that the balance is abundantly to its credit; but it falls under this false rule, therefore reject it. That is, aim not at preventing the abuse and preserving the good, but sweep away the good together with the evil, into one mad chaos. Fallacies of this kind are too gross to be sufferable; but what exposes them as such is so commonly withheld that they are renewed every day, endorsed by the unthinking and paid away for good, as though they were specie.

5. Now Livy's Roman History describes certain prodigies and omens; is therefore the whole of Livy's History to be rejected, or not any thing which Livy has said to be taken as true. If we have no ability to discriminate between the evil and the good, nor to separate the one from the other, but are necessitated, whenever blended, as they often are, to reject the whole; on this principle where must we stop? The art of printing, *accidentally*, has occasioned sedition; the Turks complain, that learning destroys all *their faith;* for a similar reason the Chinese burnt all learned books: to proceed consistently with this principle of *accident*, *occasion*, &c. we must destroy the art of printing, all learning, and all learned books.

GENUS II. *Fallacy resulting from a term undistributed.*

(Art. 187.) The second genus of fallacies includes two species, 1st. Those resulting from a middle term undistributed,

and 2d. From a term distributed in the conclusion not distributed in the premises.

1. See the general rules of syllogism (Rules III and IV, pages 204 and 206.)

1*st. From an undistributed middle.*

The consequence of an undistributed middle might be such as the following.

All that understand the whole of Euclid understand the first six books of Euclid.

John understands the first six books of Euclid.
John understands the whole of Euclid.

Here the middle term, "understand the first six books of Euclid" is undistributed, being the predicate of a universal, and refers to two classes. 1st. Those that understand the whole of Euclid, and 2d. Those that understand only the first six books. The major premiss converted, would be false, and no conclusion could follow.

2*d. From a term distributed in the conclusion, not distributed in the premises.*

Illicit process of the Minor.

A. Every classic is learned.

A. Every learned man is a mathematician,

A. Every mathematician is a classic.

The minor term, *mathematician*, is distributed in the conclusion, and not in the premises; it is therefore an illicit process of the minor, which cannot be obtained without the violation of the rules. This not only violates the sixth *general* rule, (page 206,) the mnemonic line for the fourth figure, (Art. 152,) (which recognizes no such mood in that figure as AAA,) and consequently the fifth special rule, (Art. 178:) similar transgression will be necessary to obtain an

Illicit process of the Major.

A. All apothecaries are chemists,

E. No apothecary is a druggist,

E. No druggist is a chemist.

No such mood in the third figure, as AEE, is acknowledged by the memorial lines, in Art. 152. The third special Rule, (Art. 176,) is also violated: the consequence is, an illicit process of the major, distributed in the conclusion, but not in the premises, and therefore necessarily involving a fallacy.

Genus III. *Fallacy from improper premises.*

(Art. 188.) The third genus of fallacy is that which comprises all cases where that fallacy results from improper premises: its species are, 1. *Begging the question*, or supposing to be granted what is not; 2. *Undue assumption*; and 3. *Mistake of the question.*

(Art. 189.) The fallacy of BEGGING THE QUESTION is that of infering a conclusion from a premiss supposed to be granted, when it is not; or from a premiss, which is the same as the conclusion.

1. This is the *Petitio Principii.* The following *varieties* are enumerated, 1st. *When we attempt to prove a thing by itself;* 2d. *By a synonymous word;* 3d. *By something equally unknown;* 4th. *By something more unknown;* or 5th. *By arguing in a circle.*

All that say that the doctrine A is equal to x *plus* y, are heretics.
You said that the doctrine A is equal to x *plus* y; therefore
You are a heretic.

2. Now how do you prove that I said either by writing or discourse, that A is equal to x *plus* y. This you take for granted, and then come to a conclusion from a premiss, yours, not mine: this is a very common case.

3. But should I have said that A is equal to x *minus* y, instead of x *plus* y, this is something similar in sound, but very different in sense; you assume, nevertheless, *your own* hypothesis, attributing all consequence to me.

4. The latter of these cases is a compound fallacy, mixing a mistake of the question, (ignoratio elenchi,) with a begging of the question, (petitio principii,) both of which are extremely common in polemic or controversial writings.

All bodies move towards the centre of the universe.
All bodies move towards the centre of the earth.
The centre of the earth is the centre of the universe.

5. This was a fallacy of the peripatetics. In the minor it is taken for granted, that "*all* bodies move towards the centre of the earth:" those do within the limits of the earth's at-

traction, that is *some* bodies, not *all;* the minor, therefore, is not granted, and the conclusion does not follow.

All things soporific induces sleep.
Opium is a soporific; therefore
Opium induces sleep.

6. This is the same thing as to attempt to prove a thing by itself; a species of circle; and amounts to this; opium induces sleep, because it induces sleep.

7. Of the circle, many are the examples; thus when the Mussulmen are asked, "How do you know that Mahomet was a prophet?" Their answer is, "because the Koran says so;" and when asked, "how do you know that the Koran is true?" they answer, "because Mahomet said so." In a similar way, "the necessarians, bring their hypothesis to prove a fact, and then allege the fact as proof of their hypothesis. They first assume *gratuitously*, that the mind acts *mechanically*, like the body; and that it never can act, unless the motive, which causes the action, be greater than any other then existing in the mind. Any particular volition is then declared to be *necessary*, because the motive, which produced it, was the strongest then in the mind. But when asked for the proof that this motive was the strongest, they simply refer us to the volition, which *otherwise* could not have taken place. That is, the *volition* was *necessary*, because it was produced by the *strongest motive;* and the *motive* must have been the *strongest* because *the volition was produced."—Hedge.*

8. Arguing in a circle is capable, by "obliquity of expression" in one of the premises, of such disguise, that it is not readily perceived that the whole amounts to *attempting to prove the same thing from the same thing.* "Gibbon," says Dr. Whately, "affords the most remarkable instances of this kind of style. That which he really means to speak of, is hardly ever made the subject of his proposition. His way of writing reminds one of those persons who never dare look you full in the face."

(Art. 190.) The fallacy OF UNDUE ASSUMPTION, is that of infering a conclusion from a premiss either not true, or not properly connected with the conclusion.

1. Its *varieties* are, 1. The *assignation of a supposed instead of the true cause.* 2. *Substitution of a false instead of a true premiss suppressed.* 3. *Fallacy of partial reference.* 4. *Combination with a mistake of the question;* and 5. *Infering a greater from a less probability.*

2. The fallacy sometimes termed "non causa pro causa," or the *assignation of a false cause, or more properly the assignation of a supposed, instead of the proper cause,* is attributing an effect to what is not, or is not known to be its cause; as,

What cannot be otherwise accounted for than from volcanic impulse, proceeds from volcanic impulse.
Aerolites cannot be otherwise accounted for, &c.; therefore
Aerolites proceed from volcanic impulse.

But from what volcano did the one weighing more than fifty pounds proceed, which fell within ten miles of the writer of these lines, on the Wolds in Yorkshire, whose report he heard, and the facts are well attested in the philosophical records of that time? The cause commonly assigned is that of the volcano; but no known valcano exists within a thousand miles of that place.

Patients in the disease Y, taking the medicine X, are cured by the medicine X.
John was such a patient, and took that medicine; therefore
John was cured by the medicine X.

The major requires proof; some may have recovered through constitution, and from other causes, or not from the medicine X; if so, John's may have been such a case.

3. *Fallacy of suppressed premiss* frequently prevents the undue assumption from being perceived; thus "Horne Tooke would prove, by an immense induction, that all particles were originally nouns or verbs; and thence concludes that in reality they are so still, and that the ordinary division of the parts of speech is absurd; keeping out of sight, as self-evident, the other premiss, which is absolutely false; viz. that the meaning and force of a word, now and for ever, must be that which it or its root originally bore."

4. *Fallacy of partial reference* is that of quoting or refering to a part instead of the whole passage of an author necessary to show whether it is or not relevant to your subject, in the hope that most readers will not be at the trouble to examine the propriety of your quotation, and that a partial passage, in all such cases, will answer your purpose better than the whole.

5. The fallacy of undue assumption, as well as that of begging the question, is sometimes *blended with the ignoratio elenchi;* as when the parallelism of two cases is assumed from their being in *some respects* alike, though they should *differ in the very point essential* to the argument.

6. Of the fallacy of infering a greater from a less probability, the following will serve as a general example:

The army Y will *probably* be victorious.
The troop Z will *probably* be in the army Y; therefore
The troop Z will *probably* be victorious.

There is mere probability in the major, and the probability expressed in the minor is dependent on the antecedent probability, or a probability dependent on a probability; therefore less than the original. Even if the first probability were more than one-half, say $\frac{4}{7}$, and the second still greater, or $\frac{2}{3}$, yet since the product of these is $\frac{8}{21}$, it is less than the original probability, in the ratio of 2 to 3. In cases of this nature, the doctrine of chances must be consulted.

(Art. 194.) The fallacy of MISTAKING THE QUESTION is that which proceeds from an ignorance of the exact point to be proved; or presuming that something else similar, but not precisely the same, is the question, leads to a conclusion irrelevant to the one in debate.

1. This is commonly called the *ignoratio elenchi*, or ignorance of the proper argument, or only argument that can *refute*; for ἔλεγχος, or elenchos, is an argument, rather *refutation* that confutes your adversary. He falls into this fallacy *who thinks he confutes his opponent without observing the rules of contradiction.*

2. To confute an adversary then, without falling into this fallacy, an observance of the rules of contradiction are absolutely necessary, viz. "Four things are required to make a contradiction, namely, to speak of the *same thing*, 1, in the *same sense*; 2, in the *same respect*; 3, with regard to the *same third thing*; and 4, at the *same time*. If any of these conditions be wanting, *is* and *is not* may agree." (Art. 94.)

3. Again, "A and O, or E and I are contradictories. (Art. 95.) Therefore if your opponent take A, you must take O; if he take E, you must take I, and vice versa; and that with reference to *the same thing, in the same sense, and at the same time*, &c. If you are wide of this mark, you are beating the air, and under the fallacy of ignoratio elenchi.

4. We may translate "ignoratio elenchi" by ignorance of the question, or *precise* point at issue. For example one opposes you merely because he understands not, through some ambiguity, or mode of expression, or through his own want of perception, the *precise* thing you mean. When once he understands this, he drops all his opposition, and finds that he has neither inclination nor interest to oppose you any longer, since

the discovery is, that you mean precisely the same thing that he does, and he regrets only that he did not make this discovery sooner.

5. But it is sometimes worse than a mere ignorance of the question. Your adversary finds it impossible to confute you, on the exact line of contradiction, and his only plan is, 1st. to get off that line; 2d. to assume one like it; and 3d. to conceal this from you and others. Having succeeded thus far, he knows that he may have all the unthinking on his side; all that for want of discrimination know not the difference between the line he has taken and that which, fairly to oppose you, he ought to have done. Now it is no matter what his own finesse be, whether it excite the smile here, the laugh there, or the derision elsewhere, he is advancing on a line, not that of truth. And having dressed up his own man of straw, in clothes and a likeness, which he calls yours, you are cudgeled about in effigy, whilst he, in common with other Quixotes, triumphs in what he supposes to be valorous deeds.

6. In some respects there is a similarity between "begging the question," and "a mistake of the question." The former proceeds on the supposition that some premiss is granted, when it is not. That is, it is *convenient* for me to *presume* that such is your sentiment, that you really said so, or admitted it. From this premiss of *presumption* I deduce what I ought, on proper premises to have proved, and charge it to your account. A mistake of the question proceeds on either a *real* ignorance of what your *conclusion* exactly is; or it is again convenient to take that to be your conclusion which is similar but not the same, and therefore to assume premises relevant to the false, but the reverse to the one precisely in view, and generally so contrived as to throw the consequence or discredit of the former on the latter to which it does not refer; but aims to establish, by incorrect premises, a point, exactly opposite to what you, by the line of propriety and truth had intended. In short, "begging the question," assumes a premiss to be granted, and by it comes to a point that ought to have been proved; but "a mistake of the question," is a mistake of the conclusion, or under the limits and conditions, in which alone it was contemplated; and therefore, assumes premises, wide of the mark *without observing the rules of contradiction*, to establish what is irrelevant, or foreign to the sense in view; charging the consequence in either case to the opponent.

7. For example, because Mr. G. has observed that the in-

stitution or the instrument X, without considering any limitation by condition or circumstances, has been occasionally prejudicial, he therefore recommends its entire abolition. On the contrary, I observe that the institution or instrument X, under the condition Y, and circumstances Z, is of great service to society, and therefore advocate it connected with such condition and circumstances. He either not knowing what is *essential* to my conclusion, nor *why* I so conclude, or *not wishing to know*, urges his former argument, as if it were refutation, without observing the rules of contradiction, which in such cases are necessary.

8. It is likewise a practice too frequently adopted to mix up this fallacy with that of begging the question; for example, "the sophist proves or disproves, not the proposition which is really in question, but one which so implies it as to proceed on the supposition that it is already decided, and can admit of no doubt; by this means his assumption of the point in question is so indirect and oblique, that it may escape notice; and he thus establishes, *practically*, his conclusion, at the very moment he is withdrawing your attention from it to another question."

8. To this species of fallacy Aristotle refers every thing ἐξω του πραγματος out of, i. e. foreign to the affair, or question in debate; and whenever such appeals to the passions, whether characterised by such customary epithets as "*argumentum ad hominem*," "*argumentum ad verecundiam*," "*argumentum ad populum*," "*argumentum ad ignorantiam*," or not, are resorted to for the purposes of deception, whilst the "*argumentum ad rem*," the argument strictly confined to the point at issue, or "*argumentum ad judicium*," the argument addressed to your unbiassed understanding, are kept out; these severally are so many varieties of the *ignoratio elenchi*, or fallacy of ignorantly or wilfully mistaking the question.

9. "When the occasion or object in question is not such as calls for, or as is likely to excite in particular readers or hearers the emotions required, it is a common rhetorical artifice to turn their attention to some object which WILL call forth these feelings; and when they are too much excited to be capable of judging calmly, it will not be difficult to turn their PASSIONS, once roused, in the direction required, and to make them view the case before them in a very different light. When the metal is heated, it may easily be moulded into the desired form. Thus vehement indignation against some crime, may be directed

against some person who has not been proved guilty of it; and vague declamations against corruption, oppression, &c. or against the mischiefs of any particular institution or government; with high-flown panegyrics, either on unqualified liberty, rights of man, &c. on the one hand; or on justice, the constitution, &c. on the other, will gradually lead the hearers to take for granted, without proof, that the measure stated will lead to these evils or these advantages; and it will in consequence become the object of groundless abhorrence or admiration. For the very utterance of such words as have a multitude of what may be called *stimulating* ideas associated with them, will operate like a charm on the minds, especially of the ignorant and unthinking, and raise such a tumult of feeling as will effectually blind the judgment; so that a string of vague abuse or panegyric will often have the effect of a train of sound argument."*

10. The *fallacy of shifting ground* is a *variety* referible to this species; as it is avoiding intentionally, either one or the other of the premises proper to the restricted conclusion. The adversary finding it difficult to maintain his position, instead of having the honesty to acknowledge it, as covertly as possible assumes another, a device to which he may again, on the occurrence of renewed difficulty resort, and thus on alternately, from premiss to premiss, without waiting for the refutation of either. And though the strength of sense, judgment and argument be on your side, yet if he possess more of volubility, assurance, and pandering to corrupt passions than you do, he gains the ascendency not by sense, but by sound, not by judgment, but by the want of it, accompanied by artifice and design.

11. The *fallacy of partial objections* is another variety; i. e. showing that there are objections against some plan, theory or system, and thence infering that it should be rejected, when that which ought to have been proved is, that there are *more* or *stronger* objections against the receiving than the rejecting of it. There, perhaps, never was, nor will be, any plan, theory or system proposed, against which strong, and in some cases seemingly unanswerable objections may not be urged; so that unless the opposite objections be fairly weighed in the balance on the other side we can form no adequate estimate of the question proposed.

12. "This" says Dr. Whately, "is *the main* and almost

* Rhetoric, Part II. Chap. II. § 6, by Dr. Whately.

universal fallacy of infidels, and is that of which men should be first and principally warned. They find numerous objections against various parts of scripture," and that the more on account of the defect in their own powers of perception, to some of which, no answer satisfactory to them that cannot see and refuse conviction can, on this account, be given. "The incautious hearer is apt while his attention is fixed on these, to forget that there are *infinitely* more and *stronger* objections against the supposition that the Christian Religion is of *human* origin; and that we are bound in reason and candor to adopt the hypothesis which labors under the least. That the case is, as I have stated, I am authorized to assume, from this circumstance, that *no complete and consistent account has ever been given of the manner in which the Christian Religion, supposing it a human contrivance, could have arisen, and prevailed as it did.* And yet this may be obviously demanded with the utmost fairness, of those who deny its *Divine* origin. THE RELIGION EXISTS! *this is the phenomenon:* those who will not allow it to have come from God, are bound to solve this phenomenon on some other hypothesis less open to objections. They are indeed not called upon to prove that it actually did arise in this way or that; but to suggest, (consistently with acknowledged facts,) some probable way in which it may have arisen reconcileable with all the circumstances of the case. *That infidels have never done this, though they have had near two thousand years to try, amounts to a confession that no such hypothesis can be devised, which will not be open to greater objections than lie, as they think, against Christianity.*

13. The *fallacy of unfair representation* is to be classed under this head. It is very commonly, but improperly employed in the estimation of a character, or in the review of a book. It consists in exhibiting to view certain failings, mistakes or other imperfections, taking care to merge whatever is of an opposite character, and thus to mislead others, and draw the balance, however the truth may be, on the opposite side. That "humanum est errare," or it is common to fallible man to err, is in such case not the point, no more than it is to consider whether the *beam* is in my own eye; if the *mote* only can be found in yours, or some failing in the author, that is enough; whatever merits may weigh on the opposite side are out of the question. A few cases of the former kind are to become the only facts thus rendered ostensible; by these only, your character is to be represented, or with these the

opponent comes forward with his reply to such and such a work. But he that read Homer for no other purpose than to select what *he conceived* to be his faults, expecting a reward, was, after a sack of grain was set before him, directed to separate the wheat from the chaff, when he received the latter for his pains.

14. Few things are so frequently censured as *every species of slander*, at least where personality and personal interest are concerned, not directly interfering with the community, as in that slandered, but never-to-be-mended book, called the Bible. It protects you, your interests and your character too, but perhaps you thank it not; and contains a general rule, that ought to be written in letters of gold on the circle of the sky, for all nations to read, "*do unto all as ye would that that they should do unto you.*"

15. Dr. Wallis, it appears, ingeniously remarked that "jests are fallacies." Though the question "what have jests to do with argument?" would be a little startling, yet jests have to do with fallacies, and fallacies often depend on them. This is so much the case, that most *fallacies*, when reduced to their proper form, become *nothing* but *something* laughable, mere *jests* themselves. Whether it is the open or the concealed jest, it matters little, so long as, in any way, one fool can make another; by such, it is too true, that many a one has been laughed out of his wits; which of course merely proves that he who can be thus deprived of the little property he had, never had much to lose; and therefore lay within the reach of miserable buffoonery, which can only act on something within a measureable compass of itself.

SUMMARY OF FALLACIES.

GENUS I. FALLACY FROM AMBIGUITY IN ONE TERM.

SPECIES 1. *The fallacy of similar expression.*

SPECIES 2. *The fallacy of interrogation.*

SPECIES 3. *The fallacy of equivocation.*

SPECIES 4. *The fallacy of division and composition.*
Variety 1. Of division.
Variety 2. Of composition.

SPECIES 5. *The fallacy of accident.*
Variety 1. Infering accident from essence.
Variety 2. Infering essence from accident.

GENUS II. FALLACY FROM A TERM UNDISTRIBUTED.

SPECIES 1. *Fallacy from an undistributed middle.*

SPECIES 2. *Fallacy from an illicit process.*

GENUS III. FALLACY FROM IMPROPER PREMISES.

SPECIES 1. *Fallacy of begging the question.*
- *Variety* 1. Arguing by what is not granted.
- *Variety* 2. Arguing from a synonimous word.
- *Variety* 3. From something equally unknown.
- *Variety* 4. From what is more unknown.
- *Variety* 5. Arguing in a circle.

SPECIES. 2. *Fallacy of undue assumption.*
- *Variety* 1. Assigning a false cause.
- *Variety* 2. Substitution of a false premiss.
- *Variety* 3. Partial reference.
- *Variety* 4. Combination with mistake of the question.
- *Variety* 5. False inference as to probability.

SPECIES 3. *Fallacy of mistaking the question.*
- *Variety* 1. Ignorance of the question.
- *Variety* 2. Wilful mistake of the question.
- *Variety* 3. Combination with begging the question.
- *Variety* 4. By appeal to the passions.
- *Variety* 5. Shifting ground.
- *Variety* 6. Partial objections.
- *Variety* 7. Unfair representation.

Mr. Wesley says, "there are as many fallacies as there are ways of breaking any of the rules of syllogism. But one who is thoroughly acquainted with those rules will easily detect them all." *This is at once both a curious and important remark.* It may be worth while, therefore, to inquire "how many ways there are of breaking each rule?" Under article 145, notes 2 and 3, we find that all the possible arithmetical combinations of A, E, I and O, in three propositions, are *sixty-four*. Consequently these include all the correct and incorrect forms in which three propositions of four kinds each, can be arranged. Now from these it appears by the note at the foot of page 213, that there are *twenty-eight* ways of breaking the fifth rule; *twenty-four* ways of breaking the sixth rule, which likewise break other rules, and *one* which violates only the fourth rule; in all fifty-three modes of breaking three rules; to which further add the possibility of breaking rules 2 and 3, or *fifty-five* modes in all. That is, so many possibilities have the sons of fallacy in the practice of deception. Have they then any cause to complain when they have so many chances against us, whilst we have only *nineteen*,* and are content with *four*, giving them the still further advantage of *fifteen* besides; when they will be arranged against us in the *apparently* formidable ratio of SEVENTY against FOUR?†

But what then is our Ægis against this formidable phalanx of *seventy?* We of the *four* can say, that better far than the Ægis of Pallas is our shield of truth. The shield unbroken, that with

* Art. 151 and 152. † The first figure has only four moods.

increased lustre has stood the test of war for near six, and in its present combat for near two thousand years. The shield of truth *defended by its own enemies*, a numerous host, who have *unintentionally* testified, but for this cause kept out of sight: the truth that so many thousands in vain have attempted to overthrow, who, after the fair trial of near two thousand years, have failed, but without candor to acknowledge it, prefer to practise on the green tyros of any succeeding age. Courage too is on our side; we take the *four* and give you the *seventy*, and instead of shrinking are anxious for the combat, singing the Christian pæan* as the battle draws nigh.

But so far as logic is concerned, our advice is to the young soldier—the memorial lines (Art. 152) alone exclude fifty-three fallacies out of the fifty-five, and the rules the rest, however disguised; and this statement alone is sufficient to point out their importance. Avoid, by these rules, the fallacies; give them up gratuitously to the enemy, with their MITTIMUS *already signed*, in II. Thessalonians, 2d chapter, verses 10th, 11th, 12th.

* See Xenophon's Analysis, l. 2.

APPENDIX.

Section I.

Synopsis of Logic; or the Rules most essential to practice compressed into one page.

Mnemonic words will, as already observed, be often found, for practical purposes, very convenient for the memory. By them, a rule which might require a long sentence, or even a paragraph to explain, may be compressed into one or two syllables, and thus the more essential or practical parts of science may on some occasions be contained by a page. When the explanatory parts are read and well understood, the mnemonic words are sufficient to intimate to the memory certain conditions, laws of succession and other essential points which would otherwise require many pages to explain, The meaning of each is easily understood, and as this has been given in each case, we have only here to refer to Art. 69, note 2; Art. 70; Art. 85; Art. 86; Art. 87; Art. 95; Art. 102; Art. 103; Art. 104; Art. 135 and note; Art. 137. Rules for syllogisms page 203 to 207; Art. 151 and note 1; Art. 152. notes 1 and 2; Art. 154 and notes; and Art. 155.

The articles above referred to, and their notes, contain the principles most essential in practice, which by mnemonic expression, are comprised on one page; this again may be copied on a card of a size suited to the pocket book. For the adult it will generally be sufficient, having previously read the treatise itself, to commit the synopsis to memory, and by occasionally, when necessary, reviewing it, Logic will become a companion for life. And thus the possessor may, if he will, enjoy one of the only titles of *real* nobility, in becoming an *advocate for the truth.* Life is but short; when once gone, cannot be recalled; and therefore requires economy: "*spend,*" says the poet," "*no moment but in purchase of its worth.*" And that life too, short as it is, MUST be spent directly or indirectly, in word or in practice, in opposing or advocating truth: THERE IS NO MEDIUM; THE CHOICE IS OURS.

SYNOPSIS.

Universally, A affirms and E denies;
Particularly, I affirms and O denies.

A distributes the subject; O the predicate; I neither, and E both.

In *necessary* and *impossible* matter, an indefinite proposition is universal; in *contingent* matter particular. A singular proposition is generally universal.

A and O; or E and I are contradictories.

By simple conversion E is converted into E, and I into I; by particular conversion, A is converted into I, and E into O.

Whatever is predicated of a distributed middle, may be predicated in like manner of every thing contained in it.

A perfect syllogism is an argument so expressed, that the major term of the conclusion must be predicated of its minor, in consequence of that minor being contained in a distributed middle of which the same major is predicated.

R. II. An equivocal middle term proves nothing.

R. III. The middle term must be distributed in one of the premises.

R. IV. No term must be distributed in the conclusion, which was not distributed in one of the premises.

R. V. Two negative or two particular premises prove nothing.

R. VI. If either premiss be particular or negative, so is also the conclusion.

Figures: subpre, twice-pre, twice-sub, pre-sub.

F. 1. Barbara, Celarent, Darii, Ferio.

F. 2. Cesare, Camestres, Festino, Baroko.

F. 3. Darapti, Disamis, Datisi, Felapton, Bokardo, Feriso.

F. 4. Bramantip, Camenes, Dimaris, Fesapo, Fresison.

For S P convert the proposition, either S simply, or P particularly; for M transpose the premises; and for K reduce ad impossible, by substituting instead of the premiss, the contradictory of the conclusion, as A for O; and E for I; and vice versa.

SECTION II.

In treating on whatever *generally* concerns argumentation, its importance throughout has appeared to be such, as to occasion us to exceed the limits originally intended. We are, therefore, at present compelled to be, as to topics which compose this appendix, comparatively brief. Should the public patronize this effort to serve a cause which involves all that is of consequence to man, future editions will afford latitude to enlarge in all cases where brevity is now indispensable.

Remarks on the distinction between Metaphysical, Moral and Mathematical Reasoning.

The attention that has in this work been already devoted to the subject of evidence, whether metaphysical, moral, or mathematical, and to argumentation generally, precludes the necessity, at present, of entering largely on this subject.

The word *Metaphysics* is the derivative of *physics*, which is ultimately derived from φυσις, *nature, constitution, genius*, &c., and by it we understand the science that treats *generally* on the laws of nature. Metaphysics in its limited acceptation refers to the existence and properties of immaterial beings; but in its wider sense is the same as Ontology, that treats on *being* generally, *material* and *immaterial*, and on their *modes, essence, properties, attributes, laws, accidents*, and *relations*, in which sense it will include the whole of moral evidence and argumentation. And, therefore, further distinction between the two is unnecessary. (We refer to Dr. Watt's treatise on the science of Ontology.)

We shall devote a few lines briefly to inquire wherein is the difference, that some conceive they have discovered between Moral and Mathematical Demonstration? The whole of one art of reasoning must begin with one term, or with apprehension; advance to two, or to judgment; and terminate with three, which rightly connected is argument, whether moral or mathematical. One term therefore, is the first element of *all* reasoning. This one term again refers either to a being material or immaterial, or to its essence, property, attributes, laws or accidents; and of either of these, we have either the *testimony, evidence or conviction*. Consequently if moral and mathematical demonstration *essentially* differ, the difference must begin here, in one or the other of these respects, or such difference does not exist. If there be any between moral and mathematical demonstration, it is, as to reasoning, *accidental* not *essential*.

One term, or one being, is either certain, fixed, limited, or uncertain, unfixed, not limited, and consequently contingent. But moral evidence and demonstration have as much to do with things certain, fixed and limited, as mathematical, and apply not the terms

evidence or demonstration to things contingent. Things not certain are matters only of probable testimony and probable conclusion; the strength of the latter depending on the former, or it increases until testimony amounts to evidence sufficient to produce conviction and certainty.

Some seem to imagine that because the mathematician refers to lines, surfaces, and solids, and to the several kinds which each admits, that he has the advantage, because such things often are and always may be visible and tangible. But this is not precisely the fact; for when he is demonstrating the properties of triangles, squares, or circles, or of cubes, cones, cylinders or spheres, he is directly or by induction, refering to one universal that includes all such triangles, to one universal that includes all squares, or to another that includes all circles, &c.; an individual, or many individual figures of each kind, of course, he has seen, but the universal to which he refers he never did see; yet he infers all the properties of what is seen from that which is unseen.

Besides, in mixed mathematics who has more than the mathematician to do with that which every one thinks he understands, but which no one ever saw, called *motion*. Did the mathematician ever see motion, or can he tell us what motion is? It is true that he has seen a body *in motion*, but that is not motion itself. The question is what is that which is in the body when moving, that was not in it when in a state of rest. Is it a being, or a mode or affection? But no mode or affection can exist without the being of which it is a mode or affection. There are only two alternatives, viz: it is either nothing or something. If we say nothing, the consequence will be "a reductio ad absurdum." It is, therefore, something. But what is that thing? The greatest men have tried to define it, and all have failed. One defines it by its cause, another by its effect, and a third by an identical proposition, which informs us, when divested of its disguise, that *motion is motion*.

But this unseen thing, (its effect is seen but not itself,) the mathematician proceeds to measure and declare its laws. By what? Two other unseen things, viz: *time and space*. It is true that one or more effects he measures by a time-piece, and by a visible, tangible line, and having found these *effects*, under the same circumstances uniform, by the inductive process, he refers them, on laying down the general law, to a universal, which universal line in space, or universal measure in duration, as well as motion, to which they refer he never saw. Yet has he certainty referring to three unseen things, and on this kind of certainty all the Principia of Sir Isaac Newton is built. And equal certainty has the moralist though he refer to things unseen, equally certain, fixed and limited in their character. Things of a contingent nature, referible to probable testimony, are not the present subject of consideration. But it is not a *question*, it is testified by common experience, by the expe-

rience of the world, that men have as great certainty as to moral terms as they can have relative to those that are mathematical.

If men then can have as much certainty as to *one term* of a moral, as they can have as to another of a mathematical nature, undoubtedly they may as to *two terms*, and having two terms we may proceed to judgment, whether in the moral or mathematical department and by one proposition, pronounce them to be equal or unequal, like or unlike, suitable or not, &c. as the case may be. And it is the same power, the same judgment, the same rationality that judges in the one case as in the other; and if rational, it can only adopt one mode of judging, that is the one specially suited to the case: still the acts of judging, and the powers that judge are, in all cases, homogeneous powers and acts; and the evidence by which that power acts is as certain in the one case as in the other.

Again, if we may have certainty as to two terms, there is no difficulty in conceiving that we may have certainty as to three; and this is all we ask for one act of reasoning, whether in moral or mathematical demonstration. And if the power of judging is homogeneous, so is that of reasoning, of which the former is an element. It is true we may choose different modes of expressing one act of reasoning, or may vary that expression according to occasion; for we reason differently with a child to what we do with a man, or differently with the swain to what we do with the man of science; therefore we should reason differently with a *mathematician* to what we should do with a chemist, and differently with the latter to what we should do in ethics. Yet the whole, however varied as to occasion and circumstances, is one principle, one law and one line, which may have as much certainty as to one, two and three terms, in the one case as in the other; and therefore all reasoning, which includes moral and mathematical reasoning, not only as to its essential character, however varied as to mode or accident, but as to its certainty, and the *immutable* relations of things too, is one and the same.*

Mr. Locke seems to have been of the same opinion; his words are, "The precise, real essence of the things, moral words stand for, may be perfectly known; and so the congruity or incongruity of the things themselves be perfectly discovered; in which consists perfect knowledge. Definition is the only way whereby the precise meaning of moral words can be known; a way without leaving room for any contest. The relation of other modes may certainly be perceived, as well as those of number and extension, and I cannot see why they should not also be capable of demonstration, if due methods were thought on to examine or pursue their agreement or disagreement." Professor Scott, alluding to certain inaccurate expressions of Dr. Reid, says "Every branch of science

* As to moral reasoning, see an important extract from Duncan's Logic, pages 267, 268 and 269 of this work.

may occasionally assume the demonstrative form. The existence of a Deity, the immateriality of the soul, and other moral or metaphysical truths, have been as fairly demonstrated as the Pythagorean proposition, or the parabolic motion of projectiles." To this it may be added that it is to the general neglect of this definition of terms, especially at the commencement of a work, or whenever occasion requires, and to the want of consecutive and dependent argument throughout, that so many vague treatises exist that yield so little conviction to the world.

SECTION III.

Rules of Interpretation.

If it be necessary to guard the sense of the terms we ourselves employ in writing or in debate from misinterpretation, which is a very frequent source of controversy, it is no less so, on many occasions, those found in the writings of others; especially where the importance of the subject with which they are connected directly concerns either ourselves or others. The neglect of this, or of employing the requisite means to determine the meaning of a word, or the import of a passage, has been generally the origin of long and protracted contests, either in courts of law or in controversial writings. On this account rules to guide in interpretation and controversy have been drawn up, and are worthy of our attention. They are so far complete as, fortunately for our present limits, to need very few remarks of our own.*

Rule 1. "The interpreter of a written or printed document must have a thorough knowledge of the language in which it is written." (As many controversies refer to the writings of antiquity, or to the facts which they narrate, the high importance of keeping up, in every civilized nation, the knowledge of three ancient languages at least, the Hebrew, Greek and Latin, to which also we are every where indebted for the formation of our own, has not been as yet duly appreciated.)

Rule 2. We must possess an intimate acquaintance with the subject of the writing. Many words have different significations in different sciences and arts; and the particular meaning they were intended to convey, in any instance, must be agreeable to the nature of the subject on which they were employed.

Rule 3. The interpretation of a writing often requires a knowledge of the character of its author. His peculiar bent of mind, his

* The rules of interpretation and controversy may be found in Kirwan's Logic, vol. II. and Hedge's Logic, pages 157 to 167.

temperament, his vocation, and especially his political or religious tenets, should be understood.

Rule 4. If the writing to be interpreted be of ancient date, the interpreter should ascertain the genuineness of his text; whether it has descended to him as it came from the author, without any corruptions or interpolations from other hands.

Rule 5. The interpreter should also be well acquainted with the history of the country, and of the period in which the author wrote. Some words have different meanings in different ages, and writers are sometimes influenced by fashion, or circumstances of a local and temporary nature.

Rule 6. The mind of the interpreter should be wholly free from all antecedent bias in favor of any system or creed that might influence his judgment in the interpretation he is about to make.

Rule 7. In making the interpretation of a document, the subject and predicate of each proposition should be carefully distinguished; the various sentences and clauses should be construed in reference to each other; and the resulting sense of all the parts should be connected and consistent.

Rule 8. Words, which admit of different senses, should be taken in their most common and obvious meaning, or in such as their context obviously requires, and consistent with the known intention of the writer.

Rule 9. When any word or expression is ambiguous, and may, consistently with the common use then existing, be understood in different senses, it must be taken in that sense, which is agreeable to the subject, of which the writer was then treating.

Rule 10. Doubtful words and phrases must always be construed in such a sense as will make them produce some effect, in preference to one, if such exist, as may render them nugatory.

Rule 11. Violations of the rules of grammar do not vitiate a writing, in which the sense is distinctly expressed. When a passage is imperfect, or unintelligible, the interpreter is at liberty to supply such words as are manifestly necessary to render its sense complete; taking special care at the same time, to keep without interpolation what he supplies detached from the text, and strongly distinguished as a paraphrase, or as his own interpretation, to which he should add his own name, date and place, when and where his marginal or other note was annexed or subjoined. But he is not allowed in an analogous case to expunge certain words from the text in order to give an intelligible meaning to those that remain.

Rule 12. When there are no special reasons for the contrary, words should be construed in their literal rather than in their figurative sense; relative words should be refered to the nearest rather than to a remote antecedent; and words which are capable of being understood in either, should be taken in their generic rather than in their special sense.

Rule 13. However general may be the words, in which a cove-

nant is expressed, it comprehends those things only, on which it appears the parties intended to contract, and not those, which they had not in view. But when the object of the covenant is an universality of things, it comprehends all the particular things which compose that universality, even those, of which the parties had no knowledge.

Rule 14. Whatever is obscure or doubtful in a covenant should be interpreted by the intention of the parties. If the intention of the parties does not appear from the words of the covenant, it should be infered from the existing customs and usages of the place in which it was made. If the words of a covenant contradict the well known intention of the parties, this intention must be regarded rather than the words.

Rule 15. When former interpreters are appealed to, in order to establish the sense of an ancient writing, those *cæteris paribus*, should be prefered, who were nearest the author in time or place, and who had therefore better advantages for knowing his mind, than more distant commentators.

SECTION IV.

Rules of Controversy.

Rule I. The terms, to which the question in debate is expressed, and the precise point at issue, should be so clearly defined, that there could be no misunderstanding respecting them. This alone frequently will terminate the controversy at once. The want of it is often the sole origin from which controversy and all the unpleasantry attending it arises.

Rule 2. The parties should mutually consider each other as standing on a footing of equality in respect to the subject in debate; and that it is possible that he may be wrong and his adversary in the right. (The latter part of this rule, in certain cases, must be taken *cum grano salis.*)

Rule 3. All expressions which are unmeaning, and not of direct relevancy to the subject in debate, should be avoided.

Rule 4. Personal reflection, that is where a name or a character is *expressly* connected with a name, should in no instance be indulged.

Rule 5. No one has a right to accuse his adversary of indirect motives.

Rule 6. The consequences of any proposition are not to be charged on an adversary, except they are not only injurious to morals and society, but also logically deducible from that proposition.

Rule 7. As truth is the professed object of controversy, whatever proofs may be advanced on either side should be examined with fairness and candor; and any attempt to ensnare an adversary by the arts of sophistry, or to lessen the force of his reasoning by wit, cavilling, or ridicule, is a violation of the rules of honorable controversy.

SECTION V.

On Method.

Method is such a disposition of the parts of any art, science or discourse, that the whole may be more easily taught or learned.

It is two-fold. 1. *Method of invention*, which finds the rules of an art or science; *here the inductive process and analogy are useful.* 2. *Method of instruction*, which delivers them: *and here direct or syllogistic argumentation, or what it implies, is proper.* The former proceeds from sensible and particular things, to intelligible and universal; the latter from intelligible and universal things to sensible and particular.

The method of instruction is either *perfect* or *imperfect.* The former is either 1, *universal*, by which a whole art or science, or 2, *particular*, by which a part of it only is taught. Both are either 1, *synthetical*, which is used in the sciences, and beginning with the principles of a science, proceeds to the several parts and species, completing the genus: or 2, *analytical*, which is of use in the arts; and beginning with the end or design of an art, explains the subject of it, and lastly its parts. Analysis is that process by which a compound body is reduced to its elementary parts, and the property of the whole infered from its parts. Synthesis is the reverse, and implies the act or method of collecting and putting those parts together.

The general rules of method are these: In delivering an art or science, 1. Let nothing be wanting or redundant. 2. Let all the parts be consistent with each other. 3. Let nothing be treated of which is not homogeneous to the end of the art or subject of the science. 4. Let the parts be connected by easy transitions. 5. Let that precede without which the things that follow cannot be understood, but which itself can be understood without them.

The particular rules are these: 1. The unity of a science depends on the unity of its subject; the unity of an art on the unity of its end. 2. Let the more general parts precede the less general.

The *imperfect* method is arbitrary and popular; being no other than the method of prudence and common sense.

For a brief view and *recommendation* of the mathematical method see page 72, note 5.

ON THE METHOD OF USING LOGIC IN EITHER ART OR SCIENCE.

[Extracted from Bishop Sanderson.]

1*st. On treating on a simple theme.*

We may use the rules of Logic, in treating either on a simple theme, or a problem or proposition.

In treating logically on a simple term, we are to explain both the *name* and the *thing*. And

I. The *name*, by 1, Pointing out the ambiguity of the term, (if there be any,) recounting its various significations, and fixing on that particular meaning in which we at present take it. 2. Showing its various appellations both in our own and in other tongues. 3. Observing whence it is derived, with the more remarkable words of the same derivation. Not that all this is necessary to be done at all times, and on every theme; but this is the place where it should be done, when necessary; in which there will be need of discretion to notice those particulars only which conduce to the explication of the thing.

II. The *thing* is explained by *assigning its attributes*, and *distributing* or dividing it into its *parts*. The attributes are either *essential* or *non-essential*. By *essential* we understand, not only those which properly constitute its essence, the *genus* and *essential difference*; but also the *properties* of substances, the *subjects* and *objects* of accidents, with the *efficient* and final causes of both.

The *genus* should be assigned in the first place, and that the *nearest* which can be found, though premising, if occasion be, those which are more *remote*. The *difference* comes next: the want of which is supplied, and the nature more fully explained by *properties*. And here may be added, the *efficient*, *principal*, *impulsive* and *instrumental* causes, with the remote or proximate *ends*. Here also in treating on an accident, may be subjoined, its proper *subject* and adequate *object*. But these, more or less, as need shall require; which are to be closed with a complete essential (logical) definition of the thing.

III. The theme is next to be *distributed* into its several *species* or parts; just to name which is generally sufficient. From distribution we proceed to the *non-essential attributes*, whether effects, relative or opposite terms.

IV. Such *effects* as are trivial, or commonly known, may either be just mentioned or passed over in silence. Those which are of consequence and less known, may be ranged under proper heads. This is also the place for citing examples.

Relative words are those which are compared with the theme, as agreeing with it: *opposite*, as differing from it. A theme is explained by comparing it with its relatives, when things are mentioned which are, in some respects the same or similar, and it is shown

wherein that identity or similarity consists, and also wherein is the distinction or dissimilarity between them.

We, in the last place, compare the theme with its *opposites*; for even opposites cast light upon each other. There are four species of these; but the *contradictory* is usually too vague and indefinite to be of any service. And the relative opposite has been mentioned before, among the essential attributes. Therefore, the *privative* and *contrary* opposites only have place here, and very properly close the treatise.

To give an example of this, suppose the simple theme to be treated on be ENVY.

I am *first* to consider the *name:* and here I observe,

1. It may mean either actively or passively; as "He is full of envy;" that is, he envies others. "A rich man is much exposed to envy;" that is, to be envied by others. We take it in the former sense.

2. This is in *Latin* termed *Invidia*, a word which has been borrowed by many modern languages. The Romans also termed it *Livor*.

3. The word *Invidia* is supposed to be derived from two Latin words, that imply the "*looking much* upon another," (rather looking in, or into another's circumstances) which the envious are apt to do: the word *livor* from the livid complexion which usually attends the envious temper.

There are two words of the same derivation, which are frequently confounded with each other, namely invidious and envious; and yet the signification of the one is widely different from that of the other. An *envious* man, is one who is under the power of envy; an *invidious* office, one that is apt to raise envy or dislike.

II. In explaining the *thing*, I observe, *first*, the *essential attributes*; as,

The *genus:* to premise the more *remote*; it is a passion, a sort of grief; but the *nearest genus*, is a vicious grief.

I next observe the *difference*, taken

1. From the *subject*, which are almost all mankind; but chiefly those who are ignorant of God, and consequently unable to govern themselves.

2. From the *object*, which is two-fold; of the *thing*, or of the *person*. The thing envied, may be good of any kind; apparent or real, useful or pleasant; of mind, body or fortune. The person envied, may be any other man, superior, equal, or inferior; only not at a great distance, either of time, of place, or of condition. For few envy them that have been long dead, them that live in China or Japan; or those who are above or beneath them beyond ordinary degrees of comparison.

3. From the *efficient* cause. The *principal internal cause in him that envies*, is pride and inordinate self-love. The *impulsive external* cause may be various, either *in him that is envied*, if he

be an enemy, a rival, a vain boaster; or in some *third person*, as contempt, flattery, oblique insinuations; any of which may stir up envy.

We may, therefore, define envy to be, either more briefly, a vicious grief at the good of another; or more fully, an evil sadness of mind, whereby a man, from inordinate self-love, is troubled at the good which he sees another enjoy, or foresees he will enjoy, as he imagines it will lessen or obscure his own happiness.

III. There are three *species* of envy, each worse than the preceding: the first, when a man is pained at another's enjoying some good, (in kind or degree) which he cannot himself attain: the second, when a man is pained at another's having what he himself has, but wants to have alone: both these are exemplified in *Cæsar*, who could bear no superior; and in *Pompey*, who could bear no equal. The third, is, when a man cannot or will not enjoy his own good, lest another should enjoy it with him. It is well known how many in the learned world are infected with this disease.

The *effects* of envy are three. 1. It torments the mind continually, and spreads inquietude through the whole life. 2. It wastes even the bodily strength, and exhausts the spirits. A most just evil which is at once a sin and a punishment, and not less a scourge than it is a vice. 3. It incites a man to all manner of wickedness, detraction, calumny, strife, murder.

Its most remarkable relatives are, 1. *Hatred*, which agrees with *envy* in its *subject*; for he who envys another, cannot but hate him; and in its *efficient internal cause*, which in both is pride and blind self-love.

2. *Rejoicing in evil*; this also agrees with envy both in its subject, (for he that grieves at another's happiness, cannot but rejoice in his misery,) and in its *efficient cause*.

And yet hatred differs from envy, 1. In the *thing* hated or envied. For good is only envied; but either good or evil may be hated. 2. In the *person*. For we envy men only, not God; and not ourselves, but others; but we may hate both other men, and ourselves; both other things, and God himself.

Rejoicing in evil differs likewise from envy. 1. In the *genus*, for the genus of the latter is sorrow, of the former joy. 2. In the *object*, which, in the one is *evil*, in the other *good*.

The grand opposite to envy is BENEVOLENCE, a tender good-will to all men, which constrains us to wish well to all, and seriously to rejoice in all the good that befalls them.

2d. *On treating on a problem.*

A *problem* is a proposition to be proved. It is sometimes fully proposed, whether positively, as, "*Logic is an art*," which is

called a *Thesis*; or interrogatively, as "*Is logic an art?*" Sometimes imperfectly, when the subject only is mentioned, the predicate being left in question; as, "*on the genus of logic.*"

In a regular treatise on a problem, there are three parts, 1. The stating the question: 2. Proving the truth; and 3. Answering objections. To which may be premised, the introduction, concerning the importance of the question, and the occasion of its being disputed; and we may add the conclusion, containing a recapitulation of the whole with the corollaries arising therefrom.

I. In the introduction may be shown, that the point in debate is not of little or no moment, but either apparently of the highest concern, or if not so important in itself, yet absolutely necessary to be understood, in order to comprehend or explain those which are confessedly of the highest moment. Next should be pointed out the occasion of the doubt and the origin of the error; what gave the first rise to this dispute; and how the mistake began and increased But this must be done nakedly and simply, in a logical, not rhetorical manner.

II. After a short preface, the problem is not immediately to be proved,) unless where the terms are quite clear, and the point little controverted, (but first the terms of the question are to be explained, both the subject and the predicate. The various senses of these should be observed, and the definitions given, particularly of the predicate. We then proceed to explain the true state of the controversy, by shewing what is granted on each side, and what denied. For in every controversy there is something wherein both parties agree, and something wherein they differ. In reciting the points wherein we and our opponents agree, we may add, if need be, a short explanation or proof of them; and then show, wherein the proper difference, the very point of coutroversy lies. *If this be accurately shown, the business is in a manner done; for it is scarcely credible how much light this throws both on the proof of the truth, and the answering of objections.*

III. In *proving the truth*, if it be a plain, simple problam, it may suffice briefly to propose our judgment in a simple affirmative or negative thesis, and to confirm it by a few well-chosen arguments. But if it be more complex, it will be expedient to comprise our defence of it in several propositions; beginning with those wherein we remove the opinions of others, and then going on to establish our own; after every proposition placing the argument by which it is confirmed. But it does not suffice barely to mention these, they are also to be strongly pressed and defended, and evasions and cavils of all adversaries to be examined and overturned.

IV. Next follows the *answering of objections*. These may either be subjoined to the several opinions of our opponents, and so answered severally, or all placed together, after we have proved the point in question, and answered all together.

In order to do this effectually, we should observe, *first* is not

the conclusion advanced against me wide of the mark? Frequently the objection may be allowed, and it does not overturn any conclusion which we have advanced. Nay, sometimes it may be retorted, as proving just the contrary of what it was intended for.

If the conclusion do really contradict any of ours, we are, *secondly*, to examine the form of the argument, according to the general and special rules of syllogism, and to point out that rule against which it offends.

If the form be unexceptionable, it remains, *thirdly*, to consider the *matter* of the objection from the *premiss*. And it will generally be found that either one of the premises is *false*, (or at least *not sufficiently proved*) or that there is a latent *ambiguity* in the subject, the predicate or the middle term. In this case we are to fix upon that term and show the ambiguity of it.

V. We may close the whole by repeating the sum of what has been proved; unless when some useful observations or corollaries, either directly or by easy consequence, follow from the conclusions before established. These we are not to prove again, but briefly and nakedly to set them down as naturally deducible from those propositions which have been proved before.

SECTION VI.

Logical Parsing.

It may be affirmed, without the possibility of contradiction, that there is less difficulty in Logic, as an art, than there is either in Grammar or Arithmetic. And, consequently, its eligibility and claims for introduction into colleges and schools, especially when the unlimited range of the subjects it comprises, and its capability of service in all departments and to all the interests of society, are considered, yield not to those of any other science or art whatever. If young persons of the age of fourteen are found capable of studying Geometry or Euclid, and there is less difficulty in Arithmetic than in that, and less in Logic than in either, it follows that there is no objection on the account of difficulty. Logic *at a distance* may be contemplated in any form not its own, but when near, it becomes as one of those few friends to whom we are more attached, in proportion to increasing intimacy. To be without what we may so easily possess, implies an act of voluntary privation, that may affect interests co-extensive with our existence, and privileges which it is impossible either to foresee or appreciate.

In schools, parsing is always connected with grammar; and if logic is easier than grammar, the parsing of the former is easier than that of the latter. Grammar divides the whole of a language into eight or nine genera, and each of these into several species, and

contemplates in each, its difference, properties, and accidents, as gender, number, case, comparison, mood, tense, person, concord, government, &c. On the contrary, the parsing of logic may, with propriety, be confined to that of the proposition and syllogism. And as parsing is a process successful in rendering a pupil familiar with grammar, it cannot fail of similar success in its application to logic. It only remains to offer the few directions requisite for this purpose.

All that will be necessary in the PARSING OF A PROPOSITION, will be, 1st, to name its extremes, subject and predicate, and what kind of term each is. 2dly. The character of the whole proposition, as denoted by its sign (all, every, some, few, &c.) and its copula, (is or is not, &c.;) which proposition will be either A, E, I or O. 3dly. What is distributed, subject, predicate, both, or neither.

As to the terms, we have to recollect, 1st, that in a proposition there are only *two* terms, and that the only distinction here requisite is, into singular and universal terms (art. 9 and 10.) 2. That the predicate, being a predicable term, (Art. 9, 10, and 29) is therefore universal. (Its distribution is another thing.(The predicate of no proposition is a singular term, except the proposition be reciprocal, or capable of conversion, without change of sense; as "Romulus was the founder of Rome;" "the founder of Rome was Romulus." 3dly. But the subject of a proposition may be either a singular or a universal term.

As to the proposition, if it be indefinite (Art. 73) or singular, (Art. 72) it is reducible (Art. 72, note 3, and Art. 73, note 6) to a universal or particular, which will be, as before, either A, E, I or O. And all hypothetical and other propositions are reducible, when necessary, to one or the other of these four forms, or to the only forms necessary for consideration in parsing or in syllogism.

Example 1.

All metals are fusible.

1st. Of this proposition, "metals," *the subject*, is a universal term, because it "can be applied to all individuals" of the universal, metals, (Art. 10;) fusible, the predicate, is a universal term, because all predicable terms are universal. (Art. 29.) 2d. The character of the proposition, as its *universal* sign "all," and its *affirmative* copula "are," declare, is a universal affirmative, (Art. 66) or A; and therefore, 3d, its subject, "metals," is distributed; for "A distributes the subject."

Example 2.

Some animals are not amphibious.

1st. Of this proposition, "animals," the subject, is a universal term, because it "can be applied to all individuals of the universal, "animals;" "amphibious," the predicate, is a universal term, because all predicable terms are universal. 2d. The character of the proposition, as its *particular* sign "some," and its *negative* copula

"are not," declare, is a particular negative, or O; and therefore, 3dly, only its predicate, "amphibious," is distributed, for "O distributes the predicate."

Example 3.

Planets are bodies moving in elliptic orbits.

1st. Of this proposition, "planets," the subject, is a universal term, because it can be applied to all individuals of the universal, "planets;" "bodies moving in elliptic orbits," the predicate, is a universal term, because all predicables are universal. 2d. The character of the proposition, as it is, is indefinite, (Art. 73) the matter is *necessary*, (Art. 73, 6) i. e. *all* planets are such, and the whole is equal to

All planets are bodies moving in elliptic orbits.

Of which proposition, the character, as its *universal* sign "all," and its *affirmative* copula "are," declare, is a universal affirmative, or A; and therefore, 3d, its subject is distributed, for "A distributes the subject."

Example 4.

Fixed bodies are not falling bodies.

1st. Of this proposition, "fixed bodies," the subject, is a universal term, because it can be applied to all individuals of the universal, "fixed bodies;" "falling bodies," the predicate, is a universal term, because all predicables are universal. 2d. The character of the proposition, as it is, is indefinite; the matter is *impossible*; (Art. 73) i. e. no fixed bodies can be such; and the whole is equal to

No fixed body is a falling body.

Of which proposition the character, as its *universal* sign "no," and its *negative* copula, equivalent to "is not," declare, is a universal negative, or E; and therefore, 3d, both its subject and predicate are distributed, because "E distributes both."

Example 5.

Islands are fertile.

1st. Of this proposition, "islands," the subject is a universal term, because it can be applied to all individuals of the universal, "island;" "fertile," the predicate, is a universal term, because "all predicables are universal." 2d. The character of the proposition, as it is, is indefinite; the matter is *contingent*, (Art. 73) i. e. *some* are fertile, *some* are not; and the whole is equal to

Some islands are fertile.

Of which proposition, the character, as its *particular* sign "some," and its *affirmative* copula "are," declare, is a particular affirmative, or I; and therefore 3, neither subject nor predicate is distributed; for "I distributes neither."

Example 6.

The Mississippi is a river.

1. Of this proposition, "the Mississippi," the subject, is a singular term, (Art. 9.) because it expresses one individual, not considered as an individual of any class; "river," the predicate, is a universal term, because all predicables are universal. 2. The character of the proposition, as it is, is singular (Art. 72,) but equivalent in sense (Art. 72, 3) to a universal, meaning, "all the Mississippi is a river," of which proposition the character, as its *universal* sign "all," and its affirmative copula "is," declare, is a universal affirmative or A; and therefore, the subject is distributed, or "A distributes the subject."

When the learner is competent to parse a proposition, he may proceed to the syllogism. IN PARSING THE SYLLOGISM, 1, always begin with the conclusion, and declare which is the minor and which the major term, (Art. 130;) and according to directions given on pages 35 and 36, find out the middle term; and if on slate or paper, mark the three terms, as there prescribed: the middle term for contradistinction always underscored with a double line. 2. Now state whether there be any ambiguity or not in the middle term, and if both the premises are known to be true. 3. Declare which is the major and which the minor proposition, and the reason why, (Art. 134) and add the character of each, and mark them, as the case may be, with A, E, I or O. 4. Say what terms in the premises are distributed, particularly the middle term, the reason as to each (Art. 85;) marking each distributed term with a line drawn over it. 5. See what terms are distributed in the conclusion, and declare if any are there distributed not distributed in the conclusion, and consequently an illicit process of either the major or minor term: if there be, or any other defect, the parsing is there at an end, and the syllogism is to be rejected. 6. If all be regular, declare it to be a perfect syllogism, according to definition Art. 137. 7. Lastly, describe its figure, (according to Rule page 215,) and its mood in that figure, according to memorial lines (Art. 152) or state if it disagree with any mood in that figure; if it do not, it is regular.

cE No moving body is a fixed body.
lA Every planet is a moving body: therefore
rEat. No planet is a fixed body.

I. The conclusion of this syllogism is, "No planet is a fixed body;" its subject "planet," is the minor, and its predicate, "fixed body," is the major term of the syllogism; and the only remaining term in the whole distinct from either is "moving body," which is, therefore, the middle term; and we mark them accordingly. There is no ambiguity in the middle term, "moving body," and both the premises are known to be true. 3. The major pre-

miss is, "No moving body is a fixed body," because it compares the middle term "moving body" with the major term, "fixed body:" it is a universal negative which we mark E; The minor premiss is, "every planet is a moving body," because it compares the middle term, "moving body," with the minor term, "planet," (Art. 134.) It is a universal affirmative, which mark A. 4. The major premiss which is E., distributes both subject and predicate, because "E distributes both;" and consequently the middle term contained in that premiss. The minor premiss distributes only its subject, "planet," for "A distributes the subject," which we mark accordingly. 5. The character of the conclusion is a universal negative, or E, which therefore distributes both subject and predicate for "E distributes both," which we therefore mark; but the terms distributed in the conclusion we find already distributed in the premises as described, and consequently there is no illicit process, or other transgression of rule. 6. It is therefore a perfect syllogism, (Art. 137) wherein "the major term must be predicated of its minor, in consequence of that minor *being contained* in a *distributed middle* of which the same major is predicated. 7. It is of the first figure, according to Art. 147, or memorial line page 151; and its mood in that figure, according to lines Art. 152, is *Celarent*, and therefore does not disagree with the known moods of that figure, and consequently is regular.

E	No falling body is a star.
A	All stars are luminous bodies; therefore
O	Some luminous bodies are not falling bodies.

1. The conclusion of this syllogism is, "Some luminous bodies are not falling bodies;" its subject, "luminous bodies," is the minor, and its predicate, "falling bodies," is the major term of the syllogism; and the only remaining term in the whole distinct from either, is "star," which is, therefore, the middle term, and we mark them accordingly. 2. There is no ambiguity in the middle term "star," and both the premises are known to be true. 3. The major premiss is, "no falling body is a star," because it compares the middle term "star," with the major term "falling body:" it is a universal negative, which we, therefore, mark E. The minor premiss is "All stars are luminous," because it compares the middle term "star" with the minor term, "luminous bodies." It is a universal affirmative, which we mark A. 4. The major premiss, which is E, distributes both subject and predicate, because "E. distributes both;" and consequently the middle term contained in that premiss. The minor premiss distributes only its subject "stars," for "A. distributes the subject" which we mark accordingly. 5. The character of the conclusion is a particular negative, or O, which therefore distributes only the predicate, for "O distributes the predicate," which we, therefore, mark; but the only term

distributed in the conclusion we find already distributed in the premises as described; and consequently there is no illicit process, or other transgression of rule. 6. It is, therefore, a perfect syllogism, wherein the major term must be predicated of the minor, in consequence of that minor being contained in a distributed middle, of which the same major is predicated. 7. It is of the fourth figure, pre-sub, according to the rule page 215, and its mood in that figure, according to the memorial lines, Art. 152, is fesapo, and therefore, does not disagree with the known moods of that figure, and consequently is regular.

For practice in the parsing, both of propositions and syllogisms, a variety of examples will be found in every part of this work.

For propositions see page 102: every syllogism also contains three. A variety of the latter in every mood and figure will be found in various parts of this volume, and also in the syllogistic exercises of the next section.

SECTION VI.

Syllogistic Exercises.

The exercises of this section are of the following kinds, 1. Arguments in the form of the syllogism and regular. 2. Arguments in that form but irregular. 3. Arguments not in that form. To arrange these three classes consecutively or in any way to distinguish the one from the other would be improper as to the object for which they are inserted. To the whole the learner will, of course, apply the rules already given, when the distinctions will become his own, accompanied with the principles on which those distinctions are founded; and to him, it will be an exercise highly useful to reduce what is irregular or not in form to correct mood and figure.

1. No one that is always in fear is happy;
   Covetous men are always in fear; therefore
   Covetous men are not happy.

2. Every effect must have had an adequate cause;
   The formation of the world is an effect; therefore
   The formation of the world must have had an adequate cause.

3. Every attribute is the property of some being;
   Space and duration are attributes; therefore
   Space and duration are the properties of some being.

4. Infinite attributes are the properties of an infinite being;
   Space and duration are infinite attributes; therefore
   Space and duration are the properties of an infinite being.

5. *Every natural and just mode of argument tends to produce conviction;
Analogy is a natural and just mode of argument; therefore
Analogy tends to produce conviction.

6. All similar systems of things are likely to have had the same author and cause;
The natural and revealed systems of things are similar; therefore
The natural and revealed systems of things are likely to have had the same author and cause.

7. Whatever acts with uniformity and consistency is the proceed of intelligence;
Nature acts with uniformity and consistency; therefore
Nature is the proceed of intelligence.

8. All accountable beings are free agents;
Men are accountable beings; therefore
Men are free agents.

9. All desires to gain by another's loss, is the violation of the tenth commandment;
Gaming is a desire to gain by another's loss; therefore
Gaming is a violation of the tenth commandment.

10. Sensualists wish to enjoy perpetual gratifications without satiety;
To enjoy perpetual gratifications without satiety, is impossible.
It is impossible for a sensualist to obtain his wish.

11. Whatever during the experience of many ages, men of civilization and learning generally are disposed to believe, is worthy of evidence;
Human testimony wherein witnesses of known integrity agree, is what during the experience of many ages, men of civilization and learning generally are disposed to believe; therefore
Human testimony wherein witnesses of known integrity agree, is worthy of credence.

12. To all who would attain liberty only to destroy it, liberty cannot with safety be granted;
All aiming at or contending for the occasional suspension of the laws would attain liberty only to destroy it; therefore
To all aiming at or contending for the occasional suspension of the laws, liberty cannot with safety be granted.

13. Liberty cannot with safety be granted to those who would attain it, only to destroy it;
All aiming at universal supremacy, would attain liberty only to destroy it; therefore
Liberty cannot with safety be granted to those aiming at universal supremacy.

14. What is not a being, since it can have no attribute, can be no agent nor act, cannot produce anything;
What is called nothing, is not a being, has no attribute, is not an agent, nor can it act; therefore
What is called nothing, cannot act or produce anything.

*This and the next example have reference to Butler's analogy, a work which has the highest claims to attention.

15. Not any thing reproductive produces anything unlike itself;
Chance, by atheists, is said to be reproductive: therefore
Chance cannot produce any thing unlike itself: or that which exhibits marks of design.

16. No one admitting that a less work that discovers design, had an intelligent author, can rationally deny that a work infinitely greater discovering design had an intelligent author;
All admit that the works of Euclid implying infinitely less design than the universe, had an intelligent author; therefore
None can rationally deny that the universe implying infinitely greater design than the works of Euclid, had an intelligent author.

17. The production of the achromatic telescope implies pre-existing design and knowledge of the laws of light, in the minds of its makers (who successively were Gregory, Newton, Euler and Dollond.)
The eye is the production of an achromatic telescope; therefore
The production of an eye (without the imitation of which neither Gregory, Newton, Euler or Dollond would have succeeded,) implies pre-existing design and knowledge of the laws of light, in the mind of the only maker of an eye.

18. The production not only of an instrument of inimitable excellence, but of one capable of the reproduction of others in unlimited succession of undiminished excellence, implies infinitely greater design than that of the production of an instrument of excellence incapable of such reproduction.
The eye is the production of an instrument of inimitable excellence connected with the reproduction of others in unlimited succession of undiminished excellence; therefore
The eye implies infinitely greater design than that of the production of an instrument of excellence incapable of such reproduction.

19. Nature either is the author of nature, or the order and constitution of things that Supreme Intelligence has established and maintains;
Nature cannot be the author of nature, or the author of itself; therefore
Nature is the order and constitution of things that Supreme Intelligence has established and maintains.

20. The order and constitution of things established and maintained in the universe, is the law of Supreme Intelligence;
Nature is the order and constitution of things established and maintained in the universe; therefore
Nature is the law of Supreme Intelligence.

21. Law, supposed to exist without an Intelligent Author, is nothing or an absurdity;
Nature is law; therefore
Nature, supposed to exist without an Intelligent Author, is nothing, or an absurdity.

22. All theories and systems not only violating sacred belief, but also destructive of the order of society and government, are irrational and incompatible with civilized humanity, or with personal and social welfare;
Scepticism involves theories and systems not only violating sacred belief, but also destructive of the order of society and government; therefore
Scepticism is irrational and incompatible with civilized humanity or with personal and social welfare.

23. All terms applied to any individual, or to all individuals of the same class, are taken universally;
The predicate of a negative is applied to any individual, or to all individuals of the same class; therefore
The predicate of a negative is taken universally.

24. All terms applied to some individuals of a class only, are said to be undistributed;
The predicates of all affirmative propositions are applied to some individuals of a class only; therefore
The predicates of affirmative propositions are said to be undistributed.

25. All terms applied to individuals not considered as individuals of any class, are called singular terms;
Proper names are applied to individuals not considered as individuals of any class; therefore
Proper names are called singular terms.

26. Every term applied to an object in reference to another object to which it is related, is called a relative term;
The words husband, father, patron, &c. are applied to another object to which they are related; therefore
The words husband, father, patron, &c. are relative terms.

27. All propositions reducible to two or more propositions, are called compound propositions;
All propositions having two or more subjects or predicates, or both, are reducible to two or more propositions; therefore
All propositions having two or more subjects or predicates, or both, are compound propositions.

28. All that are of God, according to the scripture, love Him supremely, and so hear as to obey his word;
X, Y and Z do not so love Him, nor do they so hear as to obey his word; therefore
X, Y and Z are not, according to the scripture, of God.

29. All doctrines respecting the moral government of God which involve a practical absurdity, are false;
The doctrine of fatalism respecting the moral government of God involves a practical absurdity; therefore
The doctrine of fatalism is false.

30. No impostors reject, throughout a long life, worldly wealth, distinction and pleasures, and suffer poverty, toil, contempt and death, in attestation of a falsehood;
St. Paul and the other apostles thus rejected worldly wealth, &c. and suffered poverty, toil, contempt and death, in attestation of the truth of their doctrine; therefore
St. Paul and the other apostles were not impostors.

31. Whatever contradicts moral principles, restraining men from the commission of sin, is destructive to the well-being of society;
Atheism, Deism and Universalism contradict moral principles restraining men from the commission of sin; therefore
Atheism, Deism and Universalism are destructive to the well-being of society.

32. All governments admitting of suspense, deliberation, declining one way, determining, and at last acting as determined, are free;
The moral government of God admits of suspense, deliberation, declining one way, determining, and at last acting as determined; therefore
The moral government of God is free.

33. Whatever has reflection and volition, has the essential properties of mind;
Mankind has reflection and volition; therefore
Mankind has the essential properties of mind.

34. Whatever voluntarily subjects itself to a system of government, exhibits intelligence and superior powers;
The human mind voluntarily subjects itself to a system of government; therefore
The human mind exhibits intelligence and superior powers.

35. All solids expand by heat and contract by cold, and are longer or taller in summer than in winter;
Men are solids expanding by heat and contracting by cold; therefore
Men are taller in summer than in winter.

36. All solids nearer to the moon are specifically lighter than the same solids further from the moon.
A cubic foot of water near the surface of waters influenced by tide, are nearer to the moon during spring or high tide, than during neap or low tide; therefore
A cubic foot of such water, is specifically lighter than a cubic foot of water further from the moon.

37. Gravitation to the moon acts on all solids whose cohesion does not wholly resist that attraction.
The brains of some men are such solids, that their cohesion does not wholly resist that attraction; therefore
Gravitation to the moon acts on the brains of some men, whose solidity wants cohesion wholly to resist that attraction. (Luna, the moon, lunaticus; hence, the word lunatic. The same idea exists in Greek.)

38. All bodies on the earth's surface, further from the earth's centre are lighter than the same bodies when nearer to that centre.
A ship, which together with her cargo on the earth's surface at Petersburgh in Russia, weighed 2000 tons, is further from the earth's centre* on crossing the equator; therefore
The ship and her cargo which at Petersburgh, &c. weighed 2000 tons, does †not weigh 2000 tons on crossing the equator.

39. Christ came into the world to save sinners, either in this life, or in the next, or he did not come to save sinners at all.
He did not come to save them from the consequences of sin in this life, (Human laws, magistrates, and bodily suffering, and pain and death, testify this.)
He came to save them from the consequences of sin in the next life; or he came not to save them at all. (So according to the universalist, if temporal pain, &c. atone for and purify from sin, the advent of Him who is the Christian's hope and glory, was unnecessary.)

* The earth is an oblate spheroid, whose equatorial exceeds its polar diameter in the ratio of 230 to 229.

† Independently of this cause, the increase of the centrifugal force decreases the weight of bodies near the equator, or in the proportion of 289 to 288.

40 (According to some) all pain is sanatory; sin is painful; therefore *sin is sanatory!!!*

41. (According to the same,) whatever tends to produce pain, is salutary in its tendency; the violation of any or of all the laws of our physical and moral nature, tends to produce pain; therefore, the violation of any or of all the laws of our physical and moral nature is salutary in its tendency!

42. All men when they die, according to some, go to heaven.
R. T. was hanged for murder; therefore
R. T. according to some, has gone to heaven.

43. (According to some,) whatever is believed to be true, is true to him, that believes it to be true;
Simpkins believes that there are no such things as pain, taxes and death; therefore
To Simpkins there are no such things as pain, taxes and death.

44. Similar systems with similar claims to divine origin are entitled to similar regard;
The systems of nature and revelation, are similar systems with similar claims to divine origin; therefore
The systems of nature and revelation are entitled to our regard.

45. All natural and just modes of reasoning are satisfactory and conclusive.
Analogy is a natural and just mode of reasoning; therefore
Analogy is a satisfactory and conclusive mode of reasoning.

46. If virtue is voluntary, vice is voluntary: virtue is voluntary; therefore, so is vice. [Arist. Eth. B. iii.]

47. Protection from punishment is plainly due to the innocent: therefore, as you maintain that this person ought not to be punished, it appears that you are convinced of his innocence.

48. All appointments of nature are invariable: correct principles of justice are appointments of nature; therefore correct principles of justice are invariable.

49. If every story is not to be believed, of which the reporters give various or even contradictory reports; and the story of the life of Bonaparte be of this description, as it is, it follows on this ground that the story of the life of Bonaparte is not to be believed.

50. If the prophecies of the Old Testament had been written without knowledge of the events of the time of Christ, they would not correspond with them exactly; and if they had been forged by Christians, they would not have been preserved and acknowledged by Jews;
They are preserved and acknowledged by Jews, and they correspond exactly with the events of the time of Christ; therefore
They were neither written without a knowledge of these events, nor were forged by Christisns.

51. A true prophecy coincides precisely with all the circumstances of an event as could not be conjectured by natural reason;
This is the case with the prophecies of the Messiah contained in the Old Testament; therefore
These are true prophecies.

52. If any complete theory could be framed to explain the establishment of Christianity by human causes, such a theory would have been proposed before now;
But none such ever has been proposed; therefore
No such theory can be framed.

Example of Logical Analysis applied to the first part of Paley's Evidences.

[Extracted from "Praxis of Logical Analysis," by Bishop Whately.]

The ultimate conclusion, that "the Christian Religion came frome God," is made to rest (as far as "the direct historical evidence" is concerned) on these two premises; that "a religion attested by miracles, is from God;" and that "the Christian Religion is so attested."

Of these two premises, it should be remarked, the minor seems to have been admitted, while the major was denied, by the unbelievers of old: whereas at present the case is reversed.*

Paley's argument therefore goes to establish the minor premiss, about which alone in these days there is likely to be any question.

He states with this view two propositions: viz:

Prop. I. "That there is satisfactory evidence, that many, professing to be original witnesses of the Christian miracles, passed their lives in labors, dangers, and sufferings, voluntarily undergone in attestation of the accounts which they delivered, and solely in consequence of their belief of those accounts; and that they also submitted, from the same motives, to new rules of conduct.

Prop. II. "That there is NOT satisfactory evidence, that persons pretending to be original witnesses of any other similar miracles, have acted in the same manner, in attestation of the accounts which they delivered, and solely in consequence of their belief of the truth of those accounts.

Of these two propositions, the latter, it will easily be perceived, is the major premiss, stated as the *converse by negation* of a universal affirmative, the former proposition is the minor.

As a syllogism in *Barbara* therefore, the whole will stand thus.

"All miracles attested by such and such evidence, are worthy of credit:" (by conversion, "none which are not worthy of credit are so attested.")

"The Christian miracles are attested by such and such evidence:" therefore "they are worthy of credit."

The minor premiss is first proved by being taken as *several* distinct ones, each of which is separately established.

I. It is proved that the first propagators of Christianity *suffered:* by showing

1st. *A priori*, from the nature of the case, that they were *likely* to suffer: (because they were preachers of a religion unexpected and unwelcome: 1, to the Jews; and 2, to the Gentiles.)

2d. From *profane testimony.*

3d. From the testimony of *Christian writings.* (And here comes in the proof of one of the premises of this last argument; viz. the proof of the credibility, *as to this point* at least, of the Christian writings.)

These arguments are *cumulative;* i. e. each seperately goes to establish the probability of the one common conclusion, that "the first propagators of Christianity *suffered.*"

* The original opponents of Christianity admitted that miracles were wrought but attributed them to magic.

By similar arguments it is shown that their sufferings were such as they *voluntarily* exposed themselves to.

II. It is proved that "what they suffered *for* was a *miraculous* story;" by

1st. The nature of the case; they could have had nothing but miracles on which to rest the claims of the new religion.

2d. By allusion to miracles, particularly to the resurrection; both in Christian and in profane writers, as the evidence on which the religion rested.

The same course of argument goes to show that the miracles in attestation of which they suffered were such as they professed to have *witnessed.*

III. It is proved that "the miracles thus attested are what we call the *Christian* miracles;" in other words, that the story was, in the main, that which we have now in the Christian scriptures; by

§ 1st. The nature of the case; *viz.* that it is improbable the original story should have completely died away, and a substantially new one have occupied its place.

§ 2d. By the incidental allusions of ancient writers, both Christian and profane, to accounts agreeing with those of our scriptures, as the ones then received.

§ 3d. By the credibility of our historical scriptures: This is established by several distinct arguments, each separately tending to show that these books were, from the earliest ages of Christianity, well known and carefully preserved among Christians: *viz.*

§ 1. They were *quoted* by ancient Christian writers.
§ 2. With peculiar *respect.*
§ 3. Collected into a *distinct volume*, and
§ 4. Distinguished by appropriate names and *titles* of *respect.*
§ 5. *Publicly read* and expounded, and
§ 6. Had *commentaries*, &c. written on them.
§ 7. Were received by Christians of *different sects*; &c. &c.

The latter part of the first main proposition, branches off into two; viz. 1st. That the early Christians submitted to new *rules of conduct.* 2d. That they did so *in consequence* of their belief in miracles wrought before them.

Each of these is established in various parts of the above course of argument, and by similar premises; viz. the nature of the case—the accounts of heathen writers—and the testimony of the Christian Scriptures, &c.

The major premiss, that "miracles thus attested are worthy of credit," which must be combined with the former, in order to establish the conclusion that "the Christian miracles are worthy of credit," is next to be established.

Previously to his entering on the second main proposition, (which I have stated to be the converse by negation of this major premiss) he draws his conclusion from the minor premiss, in combination with the major, resting that major on

§ 1st. The *a priori improbability* that a false story should have been thus attested: viz.

"If it be so, the religion must be true. These men could not be deceivers. By only not bearing testimony, they might have avoided all these sufferings, and have lived quietly. Would men in such circumstances pretend to have seen what they never saw; assert facts which they had no knowledge of; go about lying, to teach virtue; and, though not only convinced of Christ's being an impostor, but having seen the success of his imposture in his crucifixion, yet persist in carrying it on; and so persist as to bring upon themselves, for nothing, and with a full knowledge of the consequence, enmity and hatred, danger and death?"

§ 2d. That no *false* story of miracles is *likely* to be so attested, is again proved, from the premiss that "no false story of miracles ever *has been* so attested;" and this premiss again is proved in the form of a proposition which includes it; viz. that "*no other* miraculous story *whatever* is so attested."

§ This assertion again *bifurcates*; viz. it is proved respecting the several stories that are likely to be, or that have been adduced, as parallel to the Christian, that either

§ 1. They are not so *attested*, or

§ 2. They are not properly *miraculous*; i. e. that admitting the veracity of the narrator, it does not follow that any miracle took place; as in cases that may be explained by *false perceptions*, *accidents*, &c.

In this way the learner may proceed to analyze the rest of the work, and to fill up the details of those parts of the argument which I have but slightly touched upon.

It will be observed, that to avoid unnecessary prolixity, I have in most of the above syllogisms suppressed one premiss, which the learner will be able easily to supply for himself: e. g. in the early part of this analysis it will easily be seen that the first of the series of cumulative arguments to prove that the propagators of Christianity did suffer, would at full length stand thus:

"Whoever propagated a religion unwelcome to the Jews and to the Gentiles, was likely to suffer;
The Apostles did this;
Therefore they were likely to suffer," &c. &c.

It is also to be observed, that the same proposition used in different syllogisms may require to be differently expressed, by a substitution of some *equivalent*, in order to render the argument in each *formally* correct. This of course is always allowable, provided the exact meaning be preserved: e. g. if the proposition be, "the persons who attested the Christian miracles underwent sufferings in attestation of them," I am authorised to state the same assertion in a different form, thus, "the Christian miracles are attested by men who suffered in attestation of their reality," &c.

Great care however should be used to avoid being misled by the substitution of one proposition for another, when the two are not (though perhaps they sound so) really equivalent, so that the one warrants the assumption of the other.

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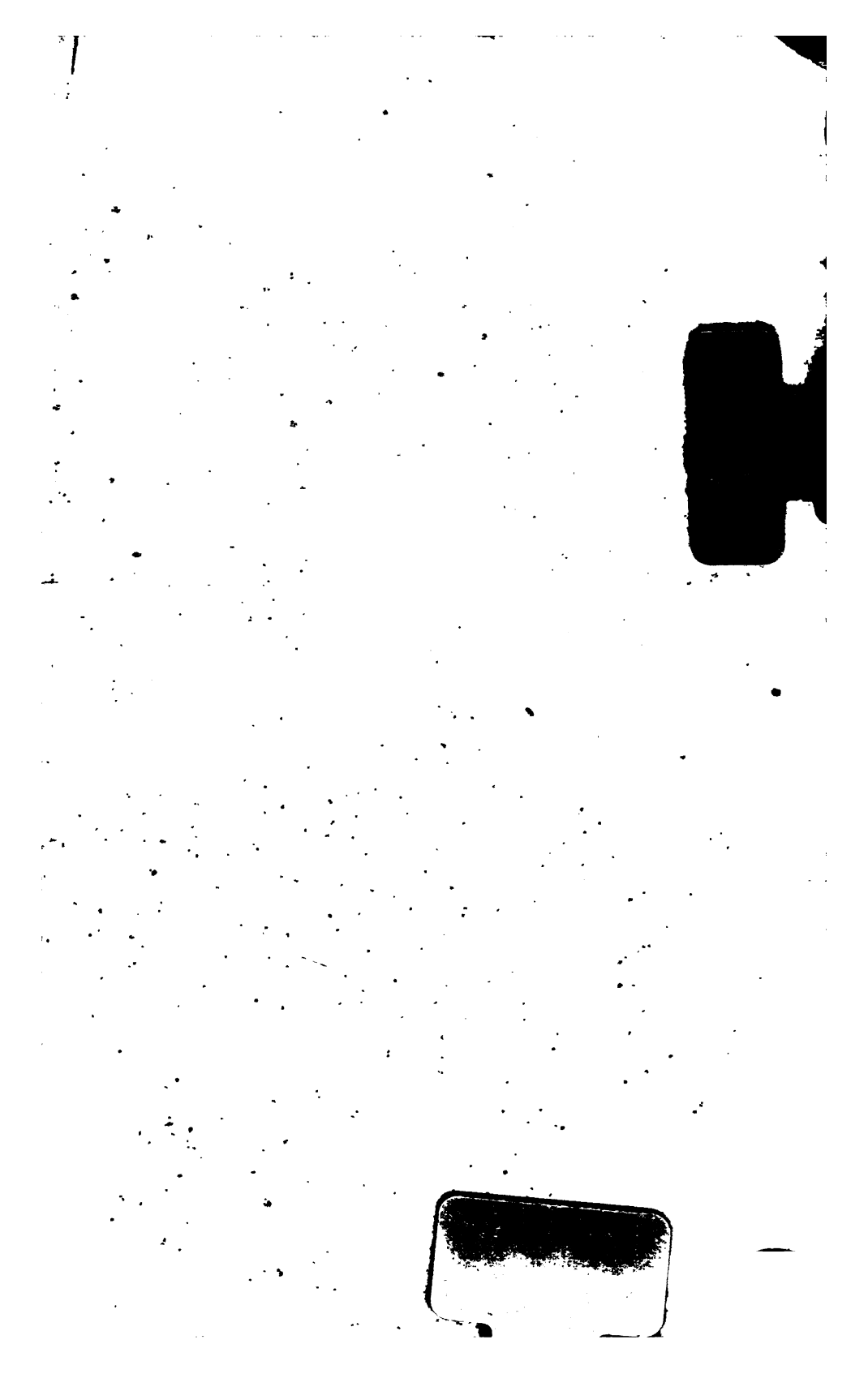
ERRATA.

For P. understand page, for L. line from the top, I. instead of, and for R. read.

P. 16, l. 23, i. λπατ, r. λπτα.
P. 19, l. 3, i. or guiding, r. for guiding.
P. 20, l. 27, i. a and permanent, r. and a permanent.
P. 42, l. 14, i. A (opposite the conclusion) r. E.
P. 68, l. 37, i. uuiversal, r. universal.
P. 82, l. 4, i. prefer, r. profess.
P. 108, l, 39, i. fonnder, r. founder.
P. 130, last line but one, i. χιρσις, r. χρισις.
P. 142, l, 1, read, "when we say, we perceive, are conscious, remember, or reflect, we refer to a present or antecedent sensation, idea or emotion, &c.
P. 151, l. 22. i. indifferent to them; r. indifferent to him.
P. 182, l. 3, i. evidence; r. testimony.
P. 206, l. 24, r. E. no lion is ruminant.
P. 210, last line but one i. Συλλολισμος, r. Συλλογισμος.
P. 292, i. Xenophon's analysis, r. Xenophon's Anabasis.
P. 296, l. 32, read, "But of this unseen thing the mathematician proceeds to declare the laws."

Pp. 325-9 pencil
P. 25